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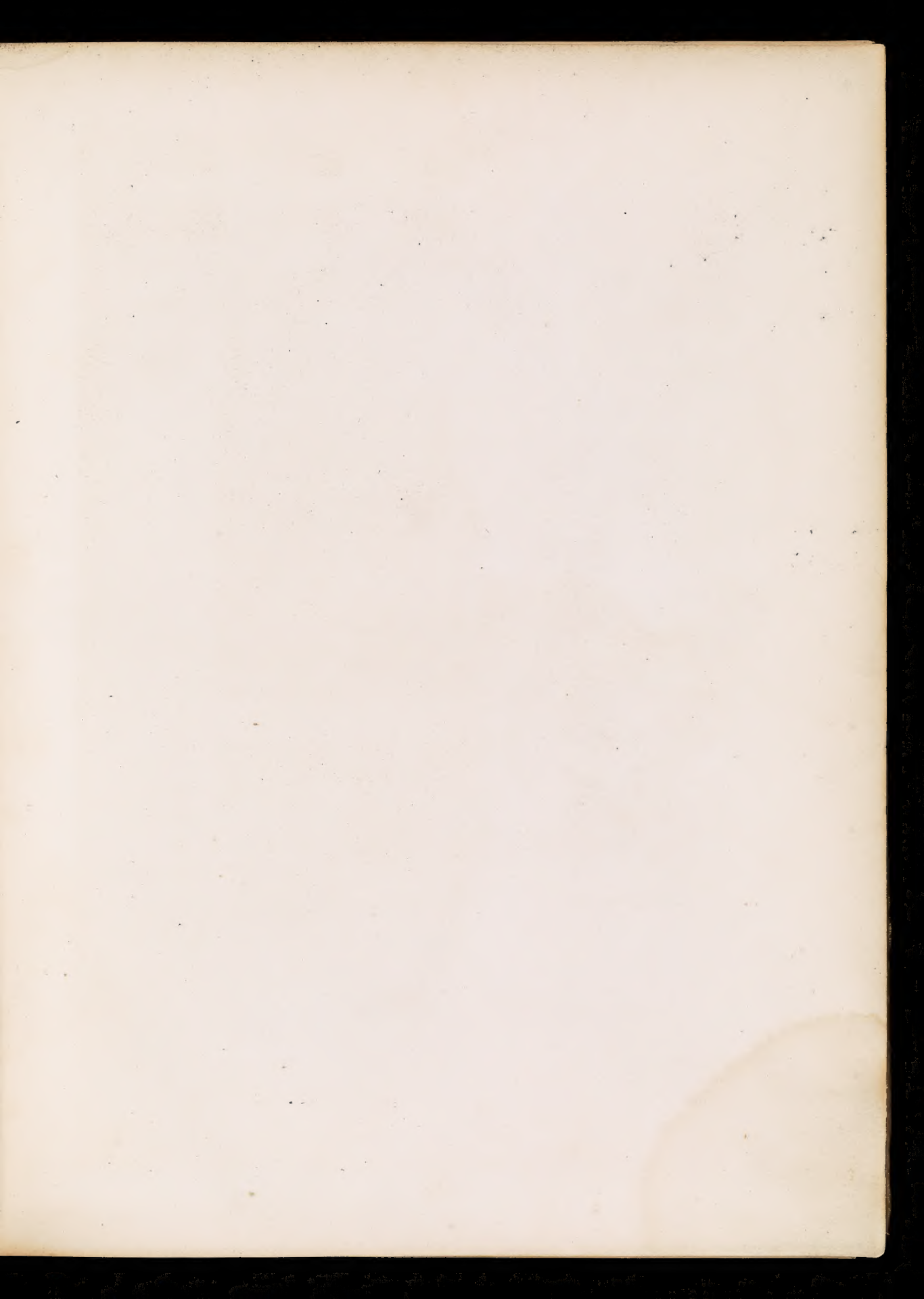
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PERSPECTIVE VIEW.

CITY AND SUBURBAN
ARCHITECTURE;

CONTAINING

NUMEROUS DESIGNS AND DETAILS

FOR

PUBLIC EDIFICES, PRIVATE RESIDENCES,

AND

MERCANTILE BUILDINGS.

Illustrated with One Hundred and Thirty-six Engravings,

ACCOMPANIED BY

SPECIFICATIONS AND HISTORICAL AND EXPLANATORY TEXT.

BY

SAMUEL SLOAN, ARCHITECT,

AUTHOR OF THE "MODEL ARCHITECT," ETC.

ST. JOSEPH'S

C. SS. R.

Rochester, N. Y.

PHILADELPHIA:
J. B. LIPPINCOTT & CO.
1859.

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SAMUEL SLOAN,

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P R E F A C E.

THE author has long been conscious of an existing want in American literature, occasioned by the absence, in a condensed and practical form, of suitable information on the subject of city architecture. European works abound in our libraries, profusely embellished with handsome pictures; but these, while they may be suited to the peculiarities of their respective countries, are yet of little practical service to the American projector.

Some may possibly remember that in the conclusion of the *Model Architect*, the author stated his intention of presenting to the public, at an early day, a volume on Street Architecture; but many circumstances—at that time unforeseen—have since occurred to retard the appearance of the promised publication until now, the principal of which—and indeed his best apology for the delay—being the increasing demand made upon his time and attention by the pressure of an extensive and increasing practice. But this delay, although undesirable in some respects, has not been unattended by contingent benefits. At the period of the announcement above alluded to, the intention was to issue the publication in parts; but this, on mature deliberation, was abandoned for various reasons, and the issue of the whole in the compass of a single volume decided upon; a course which may reasonably be deemed more agreeable to the reading public, and more generally satisfactory to all interested.

From time to time, at intervals afforded by a slight cessation of the usual labors of the profession, he has devoted his attention to the preparation and digestion of materials for this volume, until it has fairly outgrown the dimensions originally intended. To break the monotony of the plain lithograph, tinted engravings—the production of some of our best artists—are introduced in such a manner as to afford a pleasing and interesting variety. Many of the tints shown on the elevations are intended to represent the color of the building when actually erected; this furnishes the projector with a standard by which he can convey to his employee a distinct idea of the color of his choice, thus overcoming a difficulty which is too well known to those concerned in building to require particular observation here. Artistically considered, it gives an effect not otherwise to be obtained, where the character of the building is such as to debar the introduction of landscapes, so appropriate in illustrations of rural architecture.

In regard to the originality of the designs, it may be stated that no work has been consulted for hints, but all are such as have either been prepared expressly for the purpose of inserting them here, or have occurred in the regular course of business. It has been a constant endeavor to avoid borrowed features, and if there be any designs which bear a resemblance to others before published or erected, the author is not aware of it; but at the same time he is conscious that it would be almost impossible to exhibit a series of designs no one of which should be at all similar to any of the thousands which are annually prepared, all having a common object.

In the first portion of the work are presented both complete and partial specifications, and the details of many of the designs throughout the volume are accurately illustrated by drawings on an enlarged scale. Occasionally, a design is introduced without accompanying ground-plans, the reason of which is explained in its proper place.

Of the text, it is only necessary to say that the best authorities have been consulted for historical facts and principles, in addition to which the author has drawn largely upon his own personal experience and observation. Each

design is accompanied by a concise description, in connection with which will also be found remarks on some of the modern improvements in building not heretofore embodied in architectural works, and which, from their practical character, will be found of great value.

While a polished and erudite style of expression has not been attempted, care has been taken to render every part intelligible to all classes of readers.

The reader may be reminded, that in the preparation of the present work the author has chosen and pursued his course without a precedent; no work of a similar kind having been before published. While the country is flooded with general and detailed dissertations on rural architecture, city building, as a distinct branch, has heretofore occupied no place in our literature. The consciousness of moving on untried ground, while it has induced a diligent caution, and tended somewhat to delay the publication, has had its influence in improving the character of the work.

Having thus briefly stated the object and principal characteristics of his production, the author now respectfully submits it to an intelligent and discriminating public, with the sincere hope that his time and energies have not been misapplied.

SAMUEL SLOAN, ARCHITECT.

Office, No. 152 South Fourth Street, Philadelphia.

INTRODUCTION.

WITHOUT disparagement to any of the others, we claim for Architecture the highest rank among the Fine Arts. To substantiate the justice of this claim, we need only compare the importance of that which is merely decorative and fanciful with that which is really essential to the purposes of life. The usefulness of an art adds greatly to its dignity; and the inseparable connection of Architecture as a fine art, with the absolute requirements of domestic and public life, entitles it to universal consideration. The humblest cottage, as well as the proudest hall, is dependent on it for the intrinsic beauty it may possess; while painting and sculpture can only lend their charms to the galleries of the wealthy few.

Whether we feel disposed to admire the antiquity of Architecture, or view it as an agent for the transmission to posterity of national and individual taste, it equally bears away the palm of superiority. Where is the painting as ancient as the ruins of Babylon, the Pyramids of Egypt, or the temples of Greece? The paintings and sculpture of Michael Angelo, though bearing the stamp of grandeur, which his inspired hand communicated to all his works, would never have made him so enduringly eminent as the erection of the dome of St. Peter's. No one feels an excitement of wonder, while viewing the frescoed ceiling of the Sistine Chapel, comparable with that experienced on beholding the buoyant creation of architecture which surmounts the largest temple in the world; no other production of human effort can create a similar feeling: nothing in painting or sculpture can so exhibit the soarings of the human mind as this single stroke of genius; it is an architectural triumph that stands unrivaled and unparalleled in the annals of art. "If you seek my monument, look around," is the epitaph of Sir Christopher Wren; and truly, nothing could more permanently commemorate the man or the age in which he lived, than the erection of the great cathedral of St. Paul, London, in which this epitaph is written.

The mutations which the customs and forms of religion were constantly undergoing among the ancients, had their influence on everything that directly or indirectly came in contact with them; and from the barbarous ages down to the present time, in nothing is the progress of man in the great march of improvement more distinctly marked than in the art of building. The remaining structures of antiquity may thus be considered, not only as commemorative of circumstances peculiar to those primitive nations by whom they were reared, but as indexes on the scale of Time, significant of the gradations by which the arts and sciences progressed, and their gradual adaptation to the requirements of growing civilization. A brief review of their edifices affords convincing proofs of the correctness of this proposition. The Egyptians were devotees to a system of idolatry, and we receive from the vastness of their temples an impression of the character and earnestness of their devotion, which written history but faintly conveys. With the zeal of bigots, they heaped mass upon mass, in honor of their deities, till the stupendous piles have scorned alike the ravages of time and the desecrating hand of the sacrilegious invader of their mysterious sanctity. The advancement made by the Greeks and Romans in the arts of civilization is also as forcibly expressed by their architecture as by their historical writings. That of the Greeks records their devotion to mythology, and indicates their progress from a state of semi-barbarism to

civilization and comparative refinement; Roman relics proclaim as plainly the pomp and luxury of the "Eternal City;" while the massive castles of later times illustrate, with unquestionable force, the feuds of the middle ages. All these stand as witnesses testifying to the truth of history, and as mute, yet undeniable way-marks, not only of the advances in refinement of these several nations, but of the general progress of the human race.

The waves of art roll onward; occasionally there has been a transient reflux that seemed to check the progressive current, but no voice has yet said, "Thus far, no farther, shalt thou come." The accumulated volume, the growth of centuries, still flows on, carrying its thousands of fragments of ancient wreck, ever mingling with new additions and combinations, and thus will flow on till the end of time.

Notwithstanding the boasted refinement of the ancient nations of which we have just spoken, there is a disparity, between their condition and ours, that may well be a source of pride in every American bosom. Their immense structures are but so many monuments of the exactions of tyranny and the cruelties of despotism, while our edifices are the voluntary productions of a free people. American Architecture, yet in its infancy, is the legitimate offspring of free institutions—not an arch is cemented with the blood of conquest, nor a column emblazoned with the deeds of despots. There, the energies of thousands appear to have been concentrated by compulsion, to minister to the pride and magnificence of their kings and priests; here, where all are sovereigns, in contemplation of our liberties, we may rather despise than seek to imitate such gilded grandeur.

Our advances in the fine arts have not been commensurate with our general progress; the increase of our vitality has been rapid, and in our haste to grow great and strong, we have laid hold of the most convenient means to facilitate our progress in the useful, without making coextensive efforts to excel in the attractive and beautiful. Onward is our watchword—and the teeming millions pour forth, leveling the forests and tilling the prairies of the great West; cities rise as if, by magic, and a healthy civilization takes possession of the virgin soil. We have already reached the great Pacific, and ere long the chain of States will extend from sea to sea without the intervention of an imperfect link. Here is an expanse of country, possessing all that is required to facilitate growing greatness, in which we well may vie with the mightiest of existing nations. And with what resources for architectural improvement are we bountifully furnished! We have a variety of scenery and climate that will admit of an application to our buildings of all the styles of architecture as they now exist on the continent of Europe; nor could we desire better means than are in our possession to render their erection facile and their existence of long duration. Immense forests of timber of every variety, inexhaustible stores of mineral wealth, combined with natural and increasing artificial facilities for transportation, exist in unparalleled abundance. With these advantages, and the combined energies and intelligence of millions of freemen, we have much to hope for. Already we have written permanency and fitness, and set the stamp of beauty on many of our prominent edifices; yet a vast untrodden field lies before us, and while our intelligence should scorn servile imitation, we may kindle from the undying sparks of antiquity a flame of our own, that will blaze up and illuminate our temples and our homes.

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CITY AND SUBURBAN ARCHITECTURE.

AN EPITOME OF ARCHITECTURAL HISTORY.

ALL countries and ages of the world have experienced the advantage of this important truth, that society is the basis of all knowledge, and the origin and foundation of arts and sciences which have been promulgated, improved, and handed down to us by succeeding ages. The ants form a republic, and the bees a kingly government; it is equally as natural that men should associate together, and from their association derive mutual improvement and protection; hence the compacts of government that have from time to time existed, and that still continue to exist. We find mankind, at the most remote periods of which we have any historical account, uniting their efforts in building and fortifying cities, and dedicating vast temples to their gods. While every vestige of their domestic structures have disappeared, their sacred edifices have left some lingering ruins, to the consideration of which we shall devote this article.

Following the Mosaical account of the creation and civilization of mankind, we naturally enough look to the East for the origin of Architecture; and an investigation of the remains of Eastern edifices tends to establish the certainty of this supposition. All history on the subject is vague and imperfect. Historians and antiquarians have favored us with many speculations and conjectures regarding it; but while they deserve much credit for the industry with which they have labored, they have convinced the world of the comparative futility of their efforts in attempting to explore and develop what time has so nearly obliterated and obscured; so much does mere conjecture impair the validity of any detailed conclusions.

Although a cloud of uncertainty envelops the history of ancient Babylon, we are disposed to assign to its architecture the highest position in point of antiquity. As far as we can discover from historical records, it is very evident that the first great empire in the world was that of Babylon. It is supposed to have been founded by Nimrod, and to have been the place where the confusion of languages occurred; in connection with this supposition is a conjecture founded on the accounts of Moses and Herodotus, which assumes that the Tower of Babel, mentioned by

the former, is identical with the Tower of Belus, described by the latter. Herodotus speaks of the Tower of Belus as being of remote origin, of unusual construction, and of great height; and as there is no positive discord of dates, we may accept this theory as based on strong probability; and "where certainty is not to be had," says Rollin, "I suppose a reasonable person will be satisfied with probability."

Owing to the interest attached to so ancient and so powerful an empire, great pains have been taken by modern travelers to examine the supposed remains of remarkable buildings mentioned by ancient authors; but so great is the confusion, that it has almost entirely baffled their efforts. This once vast city, the metropolis of the Babylonish empire, lies in heaps of scattered, undistinguishable ruins.

These remains are generally rude, and show but little evidence of constructive science; they are of gigantic proportions, and no traces of columns are to be found; their construction affords evidence of greater antiquity than the Indian or Egyptian styles, being of a more heavy and barbarous appearance. Their edifices appear to have been almost universally composed of bricks, of which there were various qualities—some dried in the sun, and others baked in a kiln; there was also a finer sort, the clay of which, previous to burning, was mixed with chopped straw or reeds; these were used for facing walls built of the commoner sort of brick. Marks, called arrow or nail headed characters, and supposed to represent letters or words, are found on their surfaces, but all attempts to decipher them have utterly failed.

Although their buildings were externally rude, the Babylonians displayed some taste in the embellishment of the interior parts. Here they made use of colored bricks; these were painted in a moist state, and the colors afterwards burnt in; the subjects of representation were usually animals, standing out in relief from the general surface, and richly painted in their natural colors; they also employed statues for decorative purposes.

EGYPTIAN ARCHITECTURE next claims our attention. Herodotus, Manetho, and others, inform us, that the first king of Egypt was Menes, who is supposed to have lived above two thousand years before Christ, about the time of the foundation of Assyria by Nimrod, and of the reign of the Chinese Emperor Yao, with whom the historical period of China begins. It is a matter of uncertainty which of these nations came first into existence; but we have already given the preference, in point of antiquity, to the architecture of the Assyrian capital. It is, however, certain that the Egyptians stood out prominent in civilization, and that, too, at a very early period; their success in the cultivation of the arts and in pursuit of science was greater than that of any coexistent people, as is evident from the remains of their works to be seen at the present day. But little was known of Egyptian buildings, except the Pyramids, before the commencement of the present century, since which time considerable researches have been made, none of which have been more successful than those of Denon, a French architect. The character of Egyptian architecture is that of massy grandeur and severe simplicity, exhibited in simple, well-defined outline, and in the colossal dimensions of their temples and the immense blocks of material employed in

building them. "Such structures," says Denon, "appear like dreams, or the work of giants." Of the portico of Hermopolis, he says: "This was the first monument which gave me an idea of the ancient Egyptian architecture; the first stones that I had seen which had preserved their original distinction without being altered or deformed, and had remained there for four thousand years; here I fancied I saw engraven on every stone the words Posterity—Eternity. It gave an idea of the immense range and high perfection to which the arts had arrived in this country. If a peasant should be drawn out from his mud cottage and placed before such an edifice as this, would he not believe that there must exist a wide difference between himself and the beings who were able to construct it? and, without any idea of architecture, would he not say, 'This is the work of a god; a man could not dare to do it or inhabit it'?"

At a later period a description of Tentyra elicits from him the following enthusiastic remarks: "Nothing is more simple and better put together than the few lines which compose this architecture. The Egyptians, borrowing nothing from the style of other nations, have here added no foreign ornament, no superfluity of material; order and simplicity are the principles which they have followed, and they have carried them to sublimity. At this point they have stopped, and have attached so much importance to preserving the unity of design, that though they have loaded the walls of these edifices with bas-reliefs, inscriptions, historical and scientific representations, none of these rich additions intersects a single line of the general plan, all of which are religiously preserved unbroken; the sumptuous decorations which appear to the eye when close to the building, all vanish at a short distance, and leave full to view the grand elements of architectural composition which are dictated by sound reason. It never rains in this climate; all that is wanted, therefore, is a covering of plat-bands to give shade; but beyond this, neither roof nor pediment are added; the plain slope is the principle of solidity; they have adopted this form for every main supporter, doubtless with the idea that stability is the first impression that architecture should give and is an essential constituent of this art. With these people the idea of the immortality of the Deity is presented by the eternity of his temple; these ornaments, which are always rational, always consistent, always significant, demonstrate a steadiness of principle, a taste founded upon truth and a deep train of reasoning; and if we had not a full conviction of the eminent height to which they had attained in the abstract sciences, their architecture alone, in the state in which we now find it, would give the observer of the present day a high opinion of the antiquity of this nation, of its cultivation, and the impressive gravity of its character."

But it is unnecessary to multiply instances of the universal admiration of modern travelers; had such an account been given by an ancient writer, and the buildings now destroyed, it would be ranked with the fabulous and apocryphal: but now the reality of their existence is undoubted. Such structures could only have been erected under a despotic government, and probably altogether by captives or slaves, as we read of the Hebrews in the time of Moses being tasked in this manner: the manual labor employed in their erection seems inconceivable. It is a source of great wonder to us how such immense masses of material were transported from the quarries and so accurately adjusted in their respective positions; even with all the advantages of steam-power

and machinery which we possess, the difficulty and cost of the erection of such vast edifices would almost surpass calculation.

An Egyptian order, if the term may be so applied, consists, like the Greek, of column and entablature. So great is the variety of examples of the column, that anything like a detailed description would be futile, for many which present similarities of form or decoration differ in proportions, while those agreeing in the latter are diverse in other particulars. The columns consist, as in other styles, of three members—base, shaft, and capital; the base, however, is not a prominent feature, and something scarcely recognizable. Cylindrical shafts are the most general; occasionally we meet with examples of a polygonal form, and sometimes plain rectangular piers. The cylindrical shafts are usually reeded, giving the surface the appearance of a number of staves or reeds placed round a common centre, whence this kind of column has received the name of the *bundle pillar*. Sometimes immediately above the base the shaft is contracted to a small diameter, above which it immediately swells again, resembling in shape the calyx of a flower, the similarity to which is made the more striking by the leaves carved on its surface. This form is certainly objectionable; notwithstanding the arguments of its admirers, it presents a decided appearance of weakness, and although it may be said that the judgment steps in to the aid of the senses, and corrects the apparent weakness by a certainty of sufficient strength, it can scarcely be recommended either for beauty or stability. Egyptian architecture affords a great variety of capitals, differing vastly from each other in form and general character. One of these is the bulging or bulbous, which projects from the shaft in a flat curve and recedes back toward its junction with the abacus—the contour being similar to that which would be produced by a slightly yielding body pressed by a superincumbent weight. Another form of capital is the bell-shaped, resembling in contour an inverted bell, and covered with leaves and flowers.

Frequently, in the greater temples may be found a double capital, the lower section of which consists of four Isis' faces, so disposed that the folds of the head-dress hang down and project beyond the shaft; a square block above this forms the second capital. Instances are also found of triple capitals, but these are comparatively rare. Occasionally, heads of animals are carved in the place of capitals, and sometimes we find columns without capitals, or with a simple rectangular block, which is little better than an abacus. Thus, the Egyptians appear to have had no fixed rule for the form and proportions of the shaft and capital, while on the other hand the entablature seems to have been unalterable, for, except a slight diversity in the ornamentation, they are universally of the same form and character. It comprises two parts only, the epistylum and cornice, the former of which is often plain, but sometimes covered with hieroglyphics, and most frequently has a winged globe over the entrance in the centre, which is supposed to have been symbolical of the Deity. The cornice is a very prominent feature in this style, being found in nearly every situation. It consists of little more than a deep cove, but produces a great effect by the shadow which it casts; the surface is divided into panels by an ornament bearing a resemblance to the Doric triglyph, or a band of reeds. This formed the termination of the building; the roof being flat, no pediment was required; hence the finishing line was horizontal.

We will conclude our remarks on Egyptian Architecture by a short notice of the Pyramids. Of these there are about twenty of the largest size; smaller ones are quite numerous. The most remarkable are the three Pyramids of Ghizeh; the dimensions of the greatest of these have been so differently stated by ancient and modern authors, as to leave the true size a matter of uncertainty. It may be given of the largest, in general terms: the base seven hundred feet, perpendicular height about five hundred feet, and the oblique height about equal to the base. This pyramid stands on a rocky hill in the desert of Libya, about a quarter of a mile from the plains of Egypt, above which the rock rises a hundred feet or more, with an easy ascent. On this favorable elevation and solid basis the pyramid is built, the height of the situation enhancing the beauty of the work, and the firmness of the rock affording an unyielding foundation. It would lengthen this article much beyond its original intention to enter into a detailed description of the various discoveries that have been made of rooms and passages in these huge piles. Some of them are supposed to be natural rocks encased with marble and granite, a supposition which is founded on the fact that many of the interior passages are narrow and indirect, the probable effect of the natural irregularities of the rock thus encased.

The general opinion with regard to the original intention is, that they were sepulchres and monuments of the dead, particularly kings; this is directly affirmed by ancient authors, and strengthened by the writings of the Arabians. Among the Egyptians, the pyramid is said to have been considered a symbol of human life, the beginning of which is typified by the base, and the close by the apex; for which reason they built them for sepulchres. The interest attached to works which stand in such a complete state of preservation, after the revolution of thousands of years, has led us to extend this subject much beyond its intended limits, for which we shall endeavor to atone by curtailing the succeeding sketches.

PERSIAN ARCHITECTURE bears some resemblance to that of India and Egypt in general character, but is different in particular details. The similarity is evident in its massive proportions, in the pyramidal inclination of the walls, and the stiff, formal character of the sculptures. The principal ruins of this style are found at Persepolis; hence it is sometimes called Persepolitan Architecture. Like the Hindoos, the people of Persia had their cave temples, but they are comparatively shallow and unimportant.

INDIAN or HINDOO ARCHITECTURE presents a great field of wonder and research. That it sprung from Egypt seems almost beyond a doubt. The mythology of these nations seems to have been similar as well as their style of architecture. Many proofs can be adduced which bear strongly on this point, and, though not positive, afford a very strong link to the chain of conjecture. The imperial cities of India—Oude, Canouge, Delhi, Agra, and Lahore—seem, in extent, splendor, and wealth, to have exceeded the greatest cities of the Western world; and besides these, there were many others of almost paramount importance and magnificence. These extensive and luxurious cities, indexes of the temporary policy and power of certain national compacts, have passed away, like so

many scenes in the great theatre of the East, how, or in what order of chronology, we shall not detain our readers to investigate, but endeavor to present, in a general sketch, the principal peculiarities of Indian Architecture. As the religion of India has been more permanent than their political relations, it is from the sacred edifices that we are to determine the character of their architecture, and its affinity with that of other nations. Of their pagodas or temples, we find several different forms.

At Deogur and Tanjore we find simple pyramids constructed of large stones, and diminished by regular recesses; the exterior is very rude; the interior has no light from without except by a small door; it is illuminated by a profusion of lamps, with the exception of a chamber in the middle, which has but one lamp.

The second kind were formed by excavations in the sides of rocky mountains. At Bamiyan, vast numbers of apartments and recesses are cut out of the rock, some of which, on account of their great dimensions, are supposed to be temples. At that place, also, are two colossal statues, one of a man eighty ells high, and another of a woman fifty ells high, erect, and adhering to the rock from which they are sculptured. At Salsette, Elephanta, and Vellore, or Ellora, the excavations are extensive and divided into separate apartments, with regular ranges of sculptured pillars and entablatures; the walls and ceilings are covered with multitudes of figures of their genii, deities, men and women, and various animals, such as elephants, horses, lions, etc., all of the most excellent workmanship. At Salsette, the two colossal statues immediately before the entrance of the grand temple are twenty-seven feet high; they have caps and earrings. There are here two hundred figures of idols, ninety of which are in and about the great pagoda. In the great temple at Elephanta, the bust of the triple-headed deity is fifteen feet from the base to the top of the cap; the face is five feet long, and it is twenty feet across the shoulders. Along the sides of the cavern are colossal statues, to the number of forty or fifty, from twelve to fifteen feet in height, some with helmets and crowns of various devices; others are represented with curled and flowing hair; many have four hands, and some six, with shields and weapons of war, and symbols of peace. The excavations at Ellora surpass in extent and magnificence those just described, but our limits will not permit us to extend the description further.

Another kind of these edifices was composed of square or oblong courts, of vast extent. The outer circumference of one of these, on the island of Seringham, is said to be about four miles. A gateway in this wall is ornamented with pillars of single stones, thirty-three feet long and five in diameter.

There is a temple in the City of Cusi, which, from the earliest times, seems to have been devoted to Indian religion and science; it is in the form of a cross, with a cupola, terminated by a pyramid in the centre, and having also a tower at each extremity of the cross.

The last example we shall name is the celebrated Pagoda of Juggernaut, the seat of the arch-brahmin of all India, and which Hamilton compares to an immense butt set on end, its form being circular.

These temples were generally erected on the banks of the Ganges, Kistnu, and other sacred

rivers, for ablution; in some cases, where there was no river, tanks were constructed and lined with freestone or marble, with steps descending into them. Of the sculptures in those great pagodas it may be observed, that they have reference to the astronomical as well as the mythological notions prevalent in India.

The PHENICIANS were eminent in the art of building, and it is probable that their architecture differed somewhat from neighboring nations. It is supposed by some that these early people were the Cyclops, mentioned by Homer, who built the walls of Tyre, and by whom the first authenticated fabrics of stone were erected; hence the name of "Cyclopean masonry" is applied to a certain kind of rough stone walls. Others have supposed the Cyclops and Pelasgians to have been identical, but it is impossible to determine these relations with certainty. With respect to the mechanical proficiency of the Phœnicians, however, we have sufficient evidence of their advancement in their being employed by the Jewish king to build his splendid temple and palace at Jerusalem.

CLASSIC GREECE, called by the ancient inhabitants Hellas, by the Romans Græcia, and hence by us Greece, immortalized in the annals of mankind, is not so deeply veiled in the remoteness of time. Yet its earlier history is little better than conjecture. Cecrops, an Egyptian by birth, is believed to have been the founder and first monarch of Athens; hence we may readily infer that the Greeks were indebted to the Egyptians for the rudiments of their architecture. Grand and majestic, it rose from the Egyptian prototype; unrivaled it yet stands in primitive simplicity and beauty. To Greece is ascribed the invention of the Three Orders.

"First unadorned,
And nobly plain, the manly Doric rose;
The Ionic then with decent matron grace
Her airy pillars heaved; luxuriant, last,
The rich Corinthian spread her wanton wreath:
The whole so measured true, so lessened off
By fine proportion, that the marble pile
Formed to repel the still or stormy waste
Of rolling ages, light as fabrics were
That from the magic wand aerial rise.
These were the wonders that illumined Greece
From end to end."

The ruins of the most celebrated Grecian buildings are still viewed with admiration and astonishment. Among these are the Parthenon, or Temple of Minerva, and the entrance to the Acropolis, or citadel, which were built of the finest Pentilican marble, in the time of Pericles. These are in Athens. Other ruins are found in different parts of Greece, equally indicating the chasteness and beauty of Grecian art. The domestic architecture of the Greeks was not in accord-

ance with the character of their temples and public edifices; the streets of Athens were narrow and irregular, and the houses generally mean, consisting of but one story, with terraced roofs.

The Doric order lays claim to a more remote origin than the other two; it owes its appellation to the Dorians, a people who dwelt in the Peloponnesus. It is distinguished in general appearance from the succeeding orders by its bold and massy proportions, and by its comparative freedom from ornament. All its parts are bold and prominent, and its details few in number. Of this order is the Parthenon, designed by Ictinus and Callicrates, and ornamented with sculptures from the unrivaled hand of Phidias; it is deservedly ranked among the most celebrated productions of human genius. In the siege of Athens by the Venetians, in 1687, this noble structure was partly destroyed. Since that time it has been despoiled, by the curiosity of modern travelers, to a shameful extent. A fac-simile of the architecture of the Parthenon may be seen in the old United States Bank, Philadelphia.

The Ionic order owes its rise and appellation to the Ionians of Asia Minor, who introduced the spiral volute which is characteristic of the order; the period of its adoption is unknown. The finest specimens in Greece are the Temple of Erechtheus at Athens, one of Minerva Polias at Priene, and a small temple on the Ilissus; the latter is frequently copied for porticoes at the present time.

The Corinthian was the last order invented by the Greeks; whether at Corinth or not, as we might infer from the name, is a matter of uncertainty. Without taking into consideration where or by whom the order was invented, it is undoubtedly the acme of Grecian perfection. We are now about to dismiss the subject of Grecian architecture, and only regret that our space compels us to do it so summarily; its beauty, in spite of the capriciousness of taste and the lapse of time, commands our admiration to an extent beyond any of the florid productions of later art.

We may now briefly consider the architecture of the ROMANS. This people seem to have derived their first notions of the art from the Etruscans; but they afterwards borrowed from the Greeks, and having superadded many ideas of their own, their buildings present peculiarities unknown to antecedent styles. With the Greeks, architecture, strictly speaking, seems to have been applied in very few instances to anything except temples; on the other hand, the temples of the Romans were neither so extensive nor so numerous as their works of public utility and convenience. In comparing the relative merits of the architecture of the two nations, while we allow the Greeks the precedence in purity of taste, we must yield to the latter a decided superiority in the adaptation of their work to the purposes of life, in variety as well as use in design, and excellence and facility in construction. Grecian architecture was almost entirely devoid of composition or grouping, and though excelling its rival in simple grandeur and chaste decoration, it is chargeable with sameness and monotony; scarcely ever varying from the oft-repeated rectangle, the effect could not be otherwise. The Romans were a more practical people. During the earlier period of their history they constructed only works of public utility of great magnitude; and when in the zenith of their glory they cultivated architecture as one of the fine arts, they never lost

sight of the strict adaptation of their buildings to a definite purpose. The requirements necessary for such buildings as palaces, baths, theatres, amphitheatres, halls of justice, and triumphal arches, led, no doubt, to the practice of composition and grouping; and another cause of variety in their buildings was the employment of the arch, which gave them a latitude of construction unknown to the Greeks. The existence of the semicircular form in the elevation, no doubt suggested its application to the plan; this inevitably led to the introduction of an entirely new feature—the dome—a feature which gave a distinct character to the buildings in which it was employed, and introduced a new element into architectural design. The Pantheon affords the most remarkable example of this arrangement; the interior effect is widely different from anything which had before appeared; a vast area thus covered over by a single hemispherical dome, must have produced a novel and striking sensation at the time of its erection.

Much had been done before the time of Julius Cæsar to embellish Rome and some of the cities acquired by conquest, but his victories afforded him increased facilities for accomplishing several magnificent projects, among which may be noticed two temples to Venus, a vast theatre, a causeway across the Apennines from the Adriatic to Rome; in addition to this was the rebuilding of Corinth and Carthage. But architecture among the Romans reached its climax in the reign of Augustus, who conceived the project of making Rome the most splendid city in the world, and accordingly set about to embellish it with great earnestness, and incited his friends and the principal personages of the empire to follow his example, which they did with great readiness. Among others, his friend Agrippa highly distinguished himself, not only by his many magnificent buildings, baths, fountains, and aqueducts, but by the erection of that monument of Roman skill and energy, the Pantheon. The edifices which Emperor Augustus himself erected were the Forum, and Temple of Mars Ultor; the Temple of Apollo Palatine, with a portico and library; the Temple of Jupiter Tonans on the Capitol; the porticoes of Livia and Octavia; the basilica of Caius and Lucius; the Theatre of Marcellus; and a mausoleum for himself and family. No wonder that this has been called the golden age of Roman Architecture, and that Augustus boasted "that he found Rome built of brick, and left it of marble."

After the reign of Augustus architecture began to decline. Nero, however, built some gorgeous edifices; they were more remarkable for expensive decoration than for merit of design. His Domus Aurea was prodigally embellished, so as to render the expense of its construction almost incalculable. A revival took place under Vespasian and his son Titus, as the remains of the Coliseum testify, it having been commenced by Vespasian and finished by Titus. The latter also built the baths, and the triumphal arch which bears his name. Trajan was also a liberal patron of architecture, as is shown by the forum, triumphal arch, and column, which are ranked among the best specimens of the art. Hadrian, in different parts of the empire, has left evidences of his taste for architectural embellishment, and his regard for public convenience. Under the Antonines were erected the Temple of Antoninus and Faustina, the Antonine Column, and many temples and works in the provinces. From this period architecture declined; a slight improvement may be discovered in some of the succeeding reigns, but taste had become greatly vitiated, and the bold attempt of

Diocletian to elevate degraded art was but the transient flash of a dying flame. Constantine transferred the seat of empire to Byzantium, and thus Roman architecture became amalgamated with the style of the new capital, which produced a variety known as Byzantine Architecture. The peculiarities of Roman building may be embraced in a short review. In the first stages of the government, everything was built strong and massive, and adapted to some useful purpose; in this class may be ranked their great bridges and aqueducts. The architecture of the Augustan age is greatly indebted to Greece for its splendor; but to the straight entablature and chaste Corinthian the Romans added the arch and the rich Composite, placed order above order, and, with exquisite skill, varied the Doric and Ionic till they became fairly their own.

Having thus traced the outline of Architectural History, from the infancy of the art till its decline at the downfall of the Roman empire, we now refer our readers to the succeeding portions of our work for an account of mediæval and modern building, both of which are comprehensively alluded to in our descriptive essays.

DESIGN I.

AN ORNAMENTAL STORE FRONT.

ON PLATE 2 we give a design for an ornamental front for a wholesale store, the leading features of which partake of the Romanesque character. This style, with some variations according to time and place, we find diffused over the whole face of Europe. The use of the arch indicates its derivation from Roman architecture, and its appropriateness for buildings of this kind is bringing it into frequent use. In order to give this façade a desirable degree of force, the pilasters are considerably projected from the face of the wall, the cutting of the ornament and mouldings is deep and decisive; and on this, in a great measure, depends the architectural character of a front of this kind, as its extreme narrowness precludes all possibility of disturbing its general outline.

The building is four stories high with a basement, and intended for a sub-cellar beneath. The plans for the principal and second stories will be found on PLATE 3. By these it will be seen that the building is thirty feet front, by one hundred and thirty feet deep. In the sub-cellar we propose to place the furnaces for heating the whole building, except the counting-rooms, which may be heated by a stove or grate; a low-down grate is preferable. The basement, which is eight feet deep in the clear, is commodious for the reception and packing of goods appertaining to the wholesale business; it is well lighted from the front and rear, and also from above by thick glass, the position of which is shown on the plan of the principal floor. A vestibule is formed at the front entrance by a partition, the upper section of which is light ornamental work filled in with glass, and the doors correspond in number and size with the front entrance doors. By this arrangement, the room is better protected from the inclemency of the outer atmosphere in case of cold or stormy weather; for those, however, who value space more than the above advantage, it can be dispensed with. The lines on each side of the store-room are drawn to indicate the position of the shelving. In the front part of the room there is space for a table of good width on each side of the floor-light, leaving room for a passage next the shelves. In the rear portion, beneath the sky-lights, the openings for two of which are seen in the plan of the second story, may be placed a large table or counter. Under the stairway is an arched entrance to the counting-room, which is filled with a door having side and head lights, and glass in its upper section. A blank on each side of this, and finished to correspond with it, adds to the general effect.

The entrance to the stairway and also that to the passage on the opposite side of the building, may have arched heads and otherwise be made to correspond with each other. A flight of steps to the basement may be constructed under the main stairway, accessible from the side of the central archway. The form and position of the fire-proof is readily seen on the plan; it is acces-

sible only from the counting-room. Two closets are fitted up under the stairs, one for the use of the counting-room, the other for general purposes, entered from the side of the passage leading to the *chaise de commodité* and wash-basin; the rear arrangements are intended for the counting-room, and should be divided from the others by a partition of about seven feet in height, so that sufficient light from the rear may be admitted to the passage.

On the second floor the arrangement is very plainly exhibited. Above the first story the stairway is not continued in the circular plan, but is run straight, in single flights, one above another, to the fourth floor. A counter may be placed between the skylights, and one in the front part of the building. Rooms can readily be fitted up, if necessary, on the third and fourth floors, for the accommodation of clerks, who, in the busy season, are sometimes required to lodge in the store.

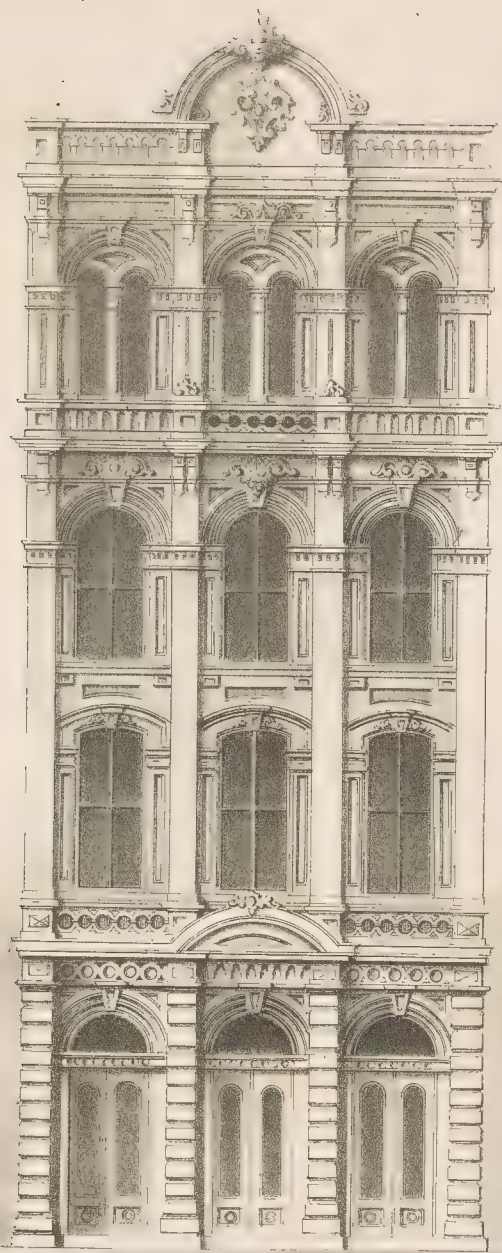
On PLATE 4, Fig. 1 shows the details of the blocking course and cornice, and Fig. 2 a section of the same.

Fig. 1, PLATE 5, shows details of third story window and cornice above; Fig. 2 a section of the same.

Fig. 1, PLATE 6, gives the details of front entrance, and Fig. 2 a section of the same.

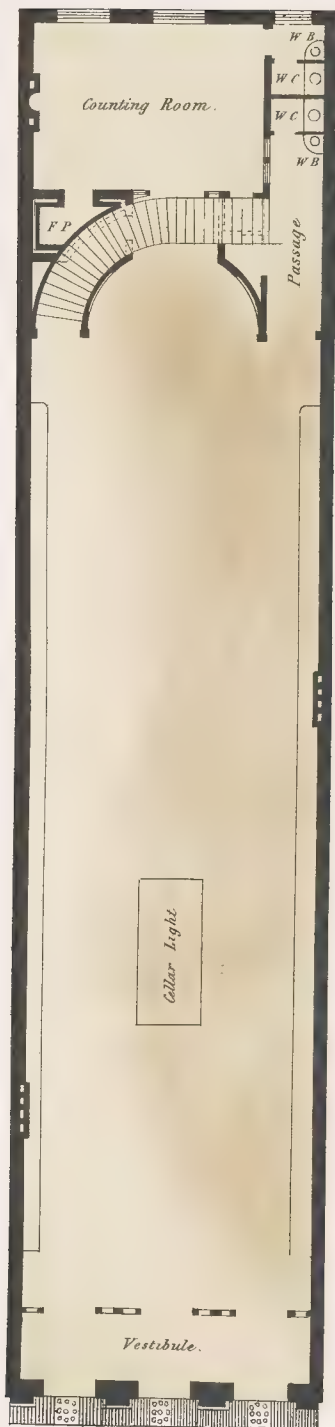
Prior to offering a specification for the edifice just described, some general remarks on building may not be inappropriate. Building, in general, we understand to be a mass formed by the combination or rather junction of materials. When a building of any moment is about to be erected, an architect should be chosen of tried experience, and well-known ability and integrity. To him the proprietor should communicate, in as lucid a manner as possible, his ideas and intentions respecting the proposed building, from which data he will be enabled to furnish the requisite plans, with estimates for the cost of their erection. These should be carefully and thoroughly examined, in order that the proprietor may be perfectly satisfied that his intentions are understood and the cost of carrying them into effect brought within the limits of the intended outlay. The architect may then proceed to make out a specification, and working drawings; these, with the plans, enable the contractor to give a safe estimate of the cost; if the estimate appears reasonable, an agreement between the proprietor and contractor is thereupon drawn up and signed. However, there are many kinds of work for which, from their novelty or unusual occurrence, it is almost impossible to anticipate a price. There are many proprietors, also, who have no stability of intention, and no sooner is work done than it is required to be taken down or in some manner varied; in this case the work should be done entirely by measurement, affixing a stated price to every corresponding article. In the erection of all structures of magnitude, a superintendent, or, in English parlance, a *clerk of the works*, should be employed to superintend the operations of the workmen, and enforce the proper execution of the drawings furnished by the architect. The person thus employed should be possessed of superior practical qualifications with respect to the art of construction, inasmuch as it pertains to his office to examine all material and decide on the fitness of their application.

The drawings necessary to the construction of an edifice vary according to the number and

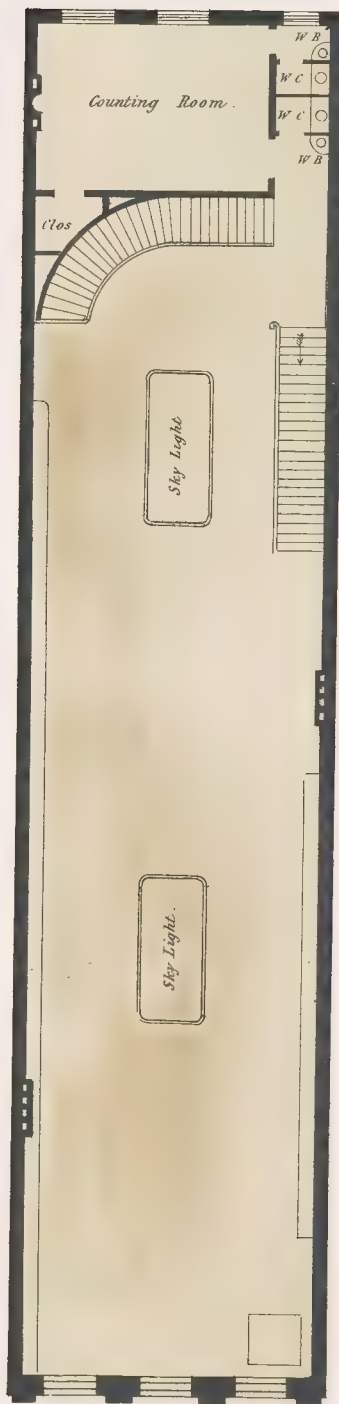


FRONT ELEVATION.

Scale 8 feet to one inch.



FIRST STORY PLAN.

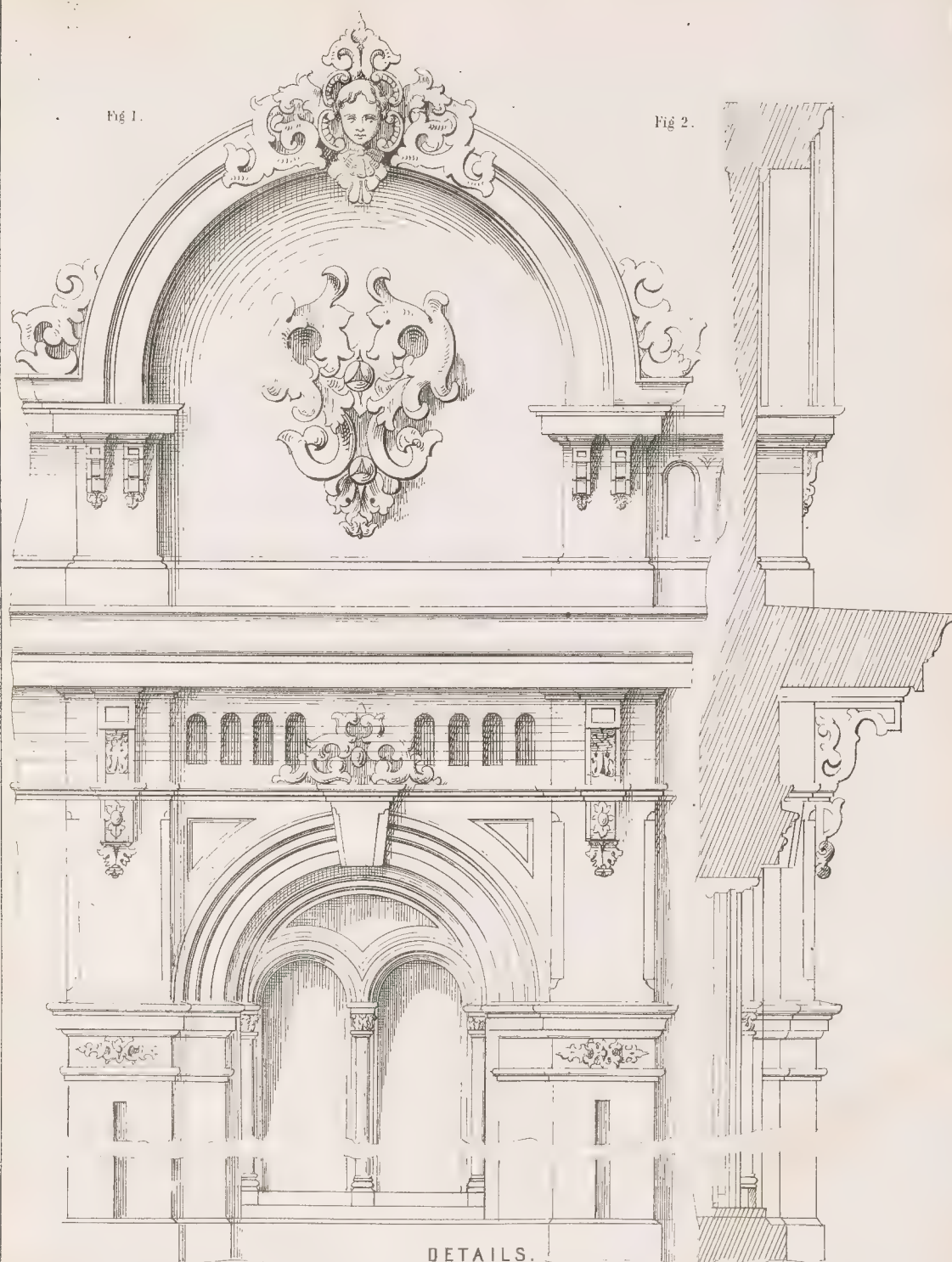


SECOND STORY PLAN.

Scale 12 feet to one inch

Fig 1.

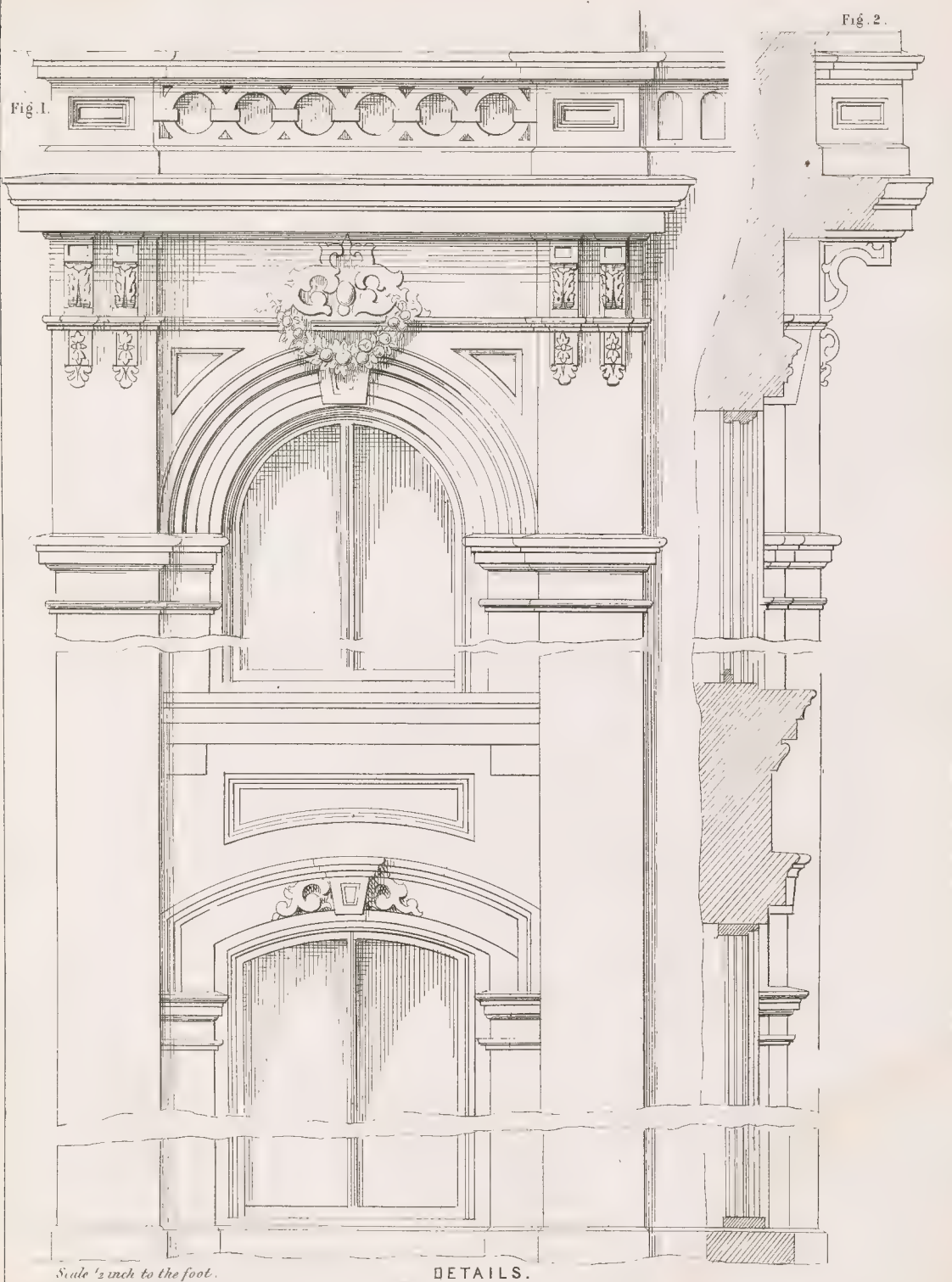
Fig 2.



DETAILS.

Scale $\frac{1}{2}$ inch to the foot

J. E. Watts & Co. N.Y.



Scale 1/2 inch to the foot.

DETAILS.

Fig. 1

Fig. 2.



Scale $\frac{1}{2}$ inch to the foot

DETAILS.

complication of its parts. For a very regular, plain building, it is obvious that fewer drawings are required than for a complicated ornamental one. It is no trifling matter for an architect to furnish all the details before the cost of a building is estimated; but if the time will permit this to be done, it enables the contractor to undertake the work at the lowest rate, and dispenses in a great measure with the necessity of the addition, which is generally found necessary to cover the uncertainty of estimating for works of great magnitude.

It is a subject of regret that the number of complete drawings provided for the use of the contractor is often insufficient, inducing erroneous calculations and frequently imperfect construction; the result of the former being loss to himself, of the latter to his employer. This is too often owing to a mistaken economy. Alarmed at the outset by the apparently considerable expense of procuring suitable drawings, the proprietor curtails at this point, and, as a consequence, frequently suffers very severely before the completion of his edifice.

To conclude this article, we append an outline SPECIFICATION.

The foundation trenches having been duly prepared so as to insure permanency, the exterior walls—which are required to be two feet in thickness, as also suitable walls and piers for the support of the fire-proof, and the partition dividing the counting-rooms from the body of the building—must be built of good quarry building stone, laid on their broadest beds, up to the level of the pavement line. The mortar for such masonry should be composed of clean sharp sand and fresh lime, properly proportioned.

The walls from the pavement line upward will be composed of brick; those on the flanks will be eighteen, the others will all be thirteen inches in thickness, including also the front wall, which is intended to be faced with marble, Picton, or light-colored granite, not less at any point than four inches in thickness. Good salmon brick may be used for these walls, except for such parts of the exterior as may be exposed, where smooth hard brick or dark stretchers are required. Pressed brick should be used on the rear if it is publicly situated. The mortar for the brickwork will be made of clean sand and fresh lime, so proportioned as to make the best mortar. All flues for gas, hot air, etc., to be carefully carried up, pargetted inside with good mortar, and topped out with hard brick.

The fire-proof will be constructed of brick, with arched floor and ceiling and hollow walls, as represented. All other brick work that may be requisite to complete the building, such as the setting of furnaces, etc., must be done in a workmanlike manner.

The flooring-joists throughout will be of spruce or pine, three by fourteen inches, placed twelve inches between centres, and solidly blocked up over the whole surface of their bearings. The trimmers to the sky-lights, stairs, flues, and hatchways, will all be double thickness, and put together with stirrups and joint-bolts, where necessary. All the joists should be backed, and will require two courses of lattice bridging, with each of which a round rod of iron, three-fourths of an inch in diameter, will run parallel, so disposed as to counteract the thrust of the bridging and prevent it from injuring the front and rear walls. The rafters will be three by five inches, placed two feet between centres, bearing upon cross-joists at proper distances apart, and boarded over closely

for tin roofing. The studding for partitions will be three by four inches, set edgewise, and securely fastened at top and bottom.

The floors throughout will be Carolina heart-pine, or other hard wood, one and a quarter inches thick, mill worked, well seasoned, and securely nailed to the joists; laid with alternate head-joints, and all joints afterwards planed. The stairs will be built of the same material and supported on strong carriages. The rail should be two and a quarter by four and a half inches, moulded with two and a half inch balusters.

The front doors will be three inches thick, and hung with three pairs of four by four inch butts to each door; the vestibule, counting-room, and stairway doors, two inches thick, all with glass in their upper section and side, and head-lights, except those for the stairway, which are intended for head-lights only.

The window frames will be of black walnut, reveal; and the sash of the same material, well balanced with suitable weights, cord, and pulleys. The glass for the front should be French plate, and for the rear best American manufacture, well bedded with putty, and bradded.

A hand-rail, and balusters of larger dimensions than those for the stairs, will be required around the sky-light apertures. The head of the principal stairway, and the stairs from the second story upward will require a continued rail of the dimensions before described. The material for the hand-rails will be black walnut, and for the balusters the best ash.

The glass in the sky-light will be set at an angle of forty-five degrees, and facing the north. The roof should be covered with the best leaded roofing tin, painted on both sides, the upper side with two coats; and the gutters so arranged as to convey the water to two four-inch conductors on the rear. A hatchway is intended to be made in all the floors, with a sliding door for each.

All the wood-work usually painted in buildings of this class should receive at least three coats of best white lead and linseed oil; the front, vestibule, and counting-room doors of first and second stories should be grained oak, and finished with two coats of varnish; the window frames, sash, hand-rail, and balusters, should receive three coats of varnish on the natural color of the wood.

All hardware, such as door-hinges, fastenings, registers, and iron-work requisite for bolts, stirrups, sky-lights, etc., to be duly provided of good quality.

The plastering of a store of this kind is usually entirely plain, and completed with two coats of brown mortar, and one of white, hard finish. Should it be desired to add to the interior appearance by decoration, fresco painting is the most ready method of obtaining the effect, and is always readily renewed or changed to a different design.

With regard to the shelving, it is generally arranged according to the particular views of the owner. It is a good plan, however, in curtaining, to attach the curtains to a series of connected rollers, so that turning a crank at one end of the curtain saves time and trouble by rolling up all the curtains belonging to the section of shelving at once, and has the additional advantage of cleanliness over the common mode.

DESIGN II.

A CITY RESIDENCE.

HISTORY is almost silent on the subject of the private dwellings of the ancients, but it is probable that they possessed but small pretensions to architectural grandeur. While we are furnished with minute descriptions of some of the temples, palaces, and similar public buildings, we obtain but an accidental notice of the habitations of the people. This leads us to believe that but little attention was paid to the domestic buildings of the earlier periods of history. The whole care of the people seems to have been confined to the temples of their gods and the palaces of their governors, and the taste of their architects exhausted in building and embellishing the abodes of their deities; and indeed in all ages and countries the art seems to be indebted for its progress to the devotional feelings of mankind.

Whether the primitive abodes of the human race were the caves of the earth, or the rude and fragile tympanized tent, it seems probable that more becoming habitations were erected at a very early period. In his description of Babylon, Herodotus speaks of houses being ranged on each side of the various streets of the city, and of others of smaller dimensions on each side of the outer wall, so placed as to admit of a wide passage or roadway between the two ranges. The former are described as consisting of three or four stories, and the latter of only one story. The domestic edifices of the Egyptians seem to have been very simple and uniform, the better class consisting of chambers surrounding a rectangular court, similar to the existing fragments of Roman erections; and sometimes a group of buildings were placed in the centre. The dwellings of the Greeks, though of considerable extent and finely embellished, in the time of Alexander, never attained the superior elegance of the later dwellings of the Romans. The first houses of the Romans were nothing better than simple cottages thatched with straw; and when the city was rebuilt, after it was burned by the Gauls, the houses were mostly constructed of wood, and covered with shingles. Many of these existed in the time of Augustus. In the reign of Nero, the greater part of the city was burned, and rebuilt in a more substantial and elegant manner; but we cannot form a very distinct idea of the domestic structures, as no entire examples remain.

Turning our attention to Great Britain, we find that domestic building has reached its present state of perfection through slowly succeeding gradations. At the invasion of the island by Julius Caesar, half a century before the Christian era, the inhabitants had nothing answering to our ideas of a town; their dwellings, like those of the ancient Germans, were all scattered about the country, as near as possible to water, and to the forest, for the convenience of hunting.

But it is not our purpose to pursue a detailed investigation of the successive steps by which domestic architecture has progressed, but merely to afford an opportunity, for those who are so disposed, to contrast modern convenience with boasted ancient magnificence. On our extreme western frontier the people of this country are now enjoying as many, and perhaps more, of the real comforts of life, as were known to the masses of the Roman people in the zenith of the empire; and it is gratifying to reflect that, at a period in point of time but a trifle remote from the present, the domestic architecture of our American cities, which now justly boast of their advancement in the essential and elevated arts of cultivated nations, made less pretensions to the embodiment of the conveniences of refined life than that of the thrifty villages that now daily spring up on the hills and prairies of our western borders—which indicates a spirit of progress at work that promises to outstrip the cumbrous growth of European greatness.

We now proceed to the description of DESIGN II., the appearance of which at once indicates its fitness for a city residence, adapted in width to suit the almost universal demand for the erection of buildings in immediate contact with each other. Buildings of this kind, while they admit of a considerable variety of architectural treatment, are more difficult to render pleasing to the general observer than rural residences. Since nothing generally can be expected from the surroundings to enhance their appearance, their whole attraction must consist in the beauty of design and the shades of color employed, our ideas in regard to which are represented on PLATE 7.

By referring to the plans on PLATE 8, it will be seen that the building is twenty-five feet front by fifty feet deep, and four stories high; the rear building is seventeen feet wide by fifty-eight feet deep, with a laundry adjoining, and two stories high. In the cellar, which is beneath all the building except the laundry, is placed the apparatus which supplies the building with heat, in this case assumed to be the hot-water furnace, hereafter fully described.

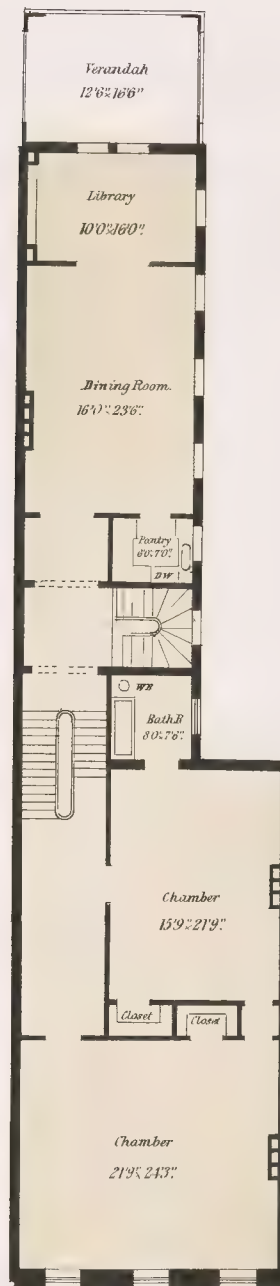
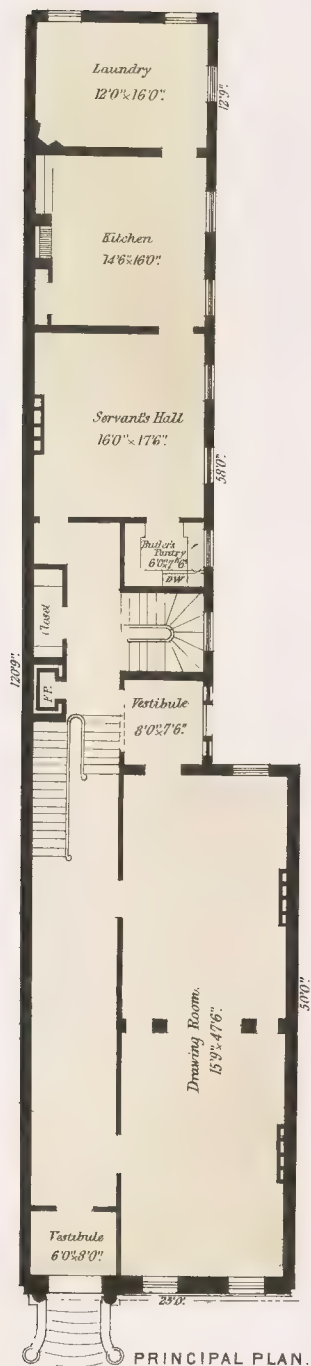
On the first story, the hall leading from the front entrance is eight feet wide; in this is placed the main stairway, which continues up to the fourth floor. The drawing-room, which is divided by columns and an elliptical archway, is lighted by two windows in front and one on the rear; each division is about sixteen by twenty-three feet. The front vestibule is six by eight feet, with ceiling groined and ribbed, having moulded panels; the side vestibule, in the rear of the drawing-room, is seven feet six inches by eight feet, and is entered from the main hall by an open elliptical arch-way. Rear of this vestibule is a flight of stairs for the use of servants, under which are the stairs leading to the cellar. Owing to a difference in the height of the stories, the half pace of the main stairway is on a level with the second floor of the rear building; the remaining seven steps to the second floor of the front building are performed on the main stairway.

Beyond the arrangements already described are the servants' hall or living room, the kitchen and laundry. Accessible from the kitchen, through the servants' hall, is the butler's pantry, in which is a sink, and a dumb-waiter, which communicates with the pantry above, adjoining the principal dining-room. On the passage from the half pace of the main stairway to the dining-room are three archways, the position of which is shown by dotted lines on the plan of the second floor. Rear of the dining-room is the library, which communicates with a verandah of light open work,



FRONT ELEVATION.

Scale 8 feet to one inch



CHAMBER PLAN.

Scale 12 feet to one inch



Scale 1/2 inch to the foot

DETAILS.

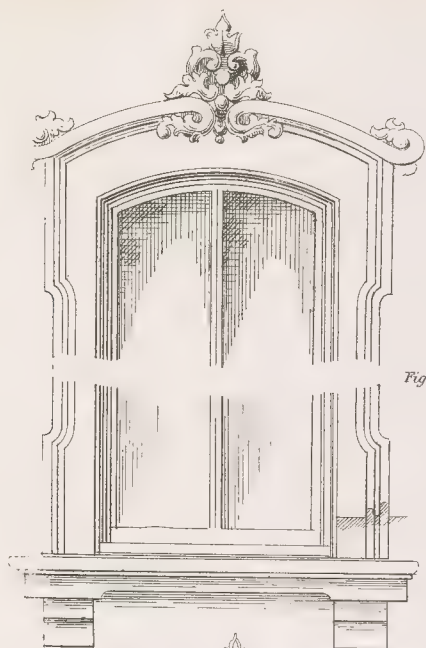


Fig. 1.

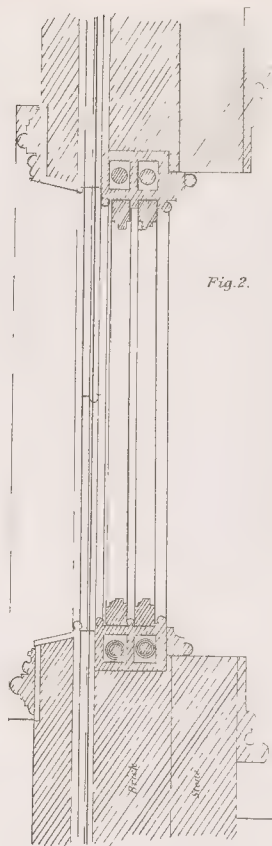


Fig. 2.

Scale 1 inch to the foot.

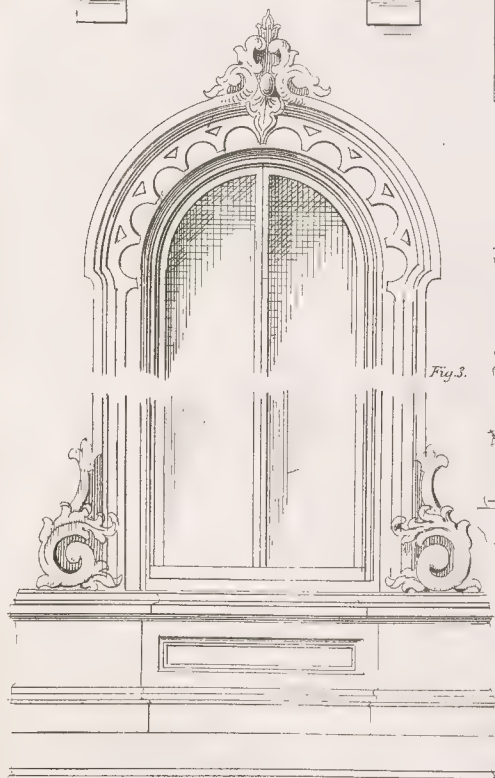


Fig. 3.

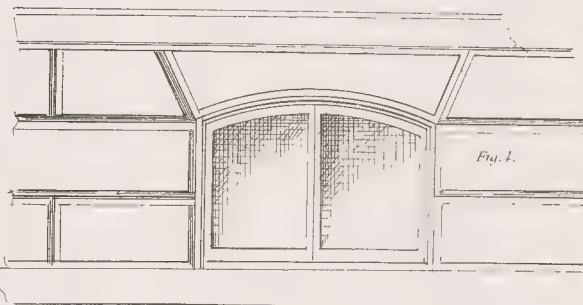
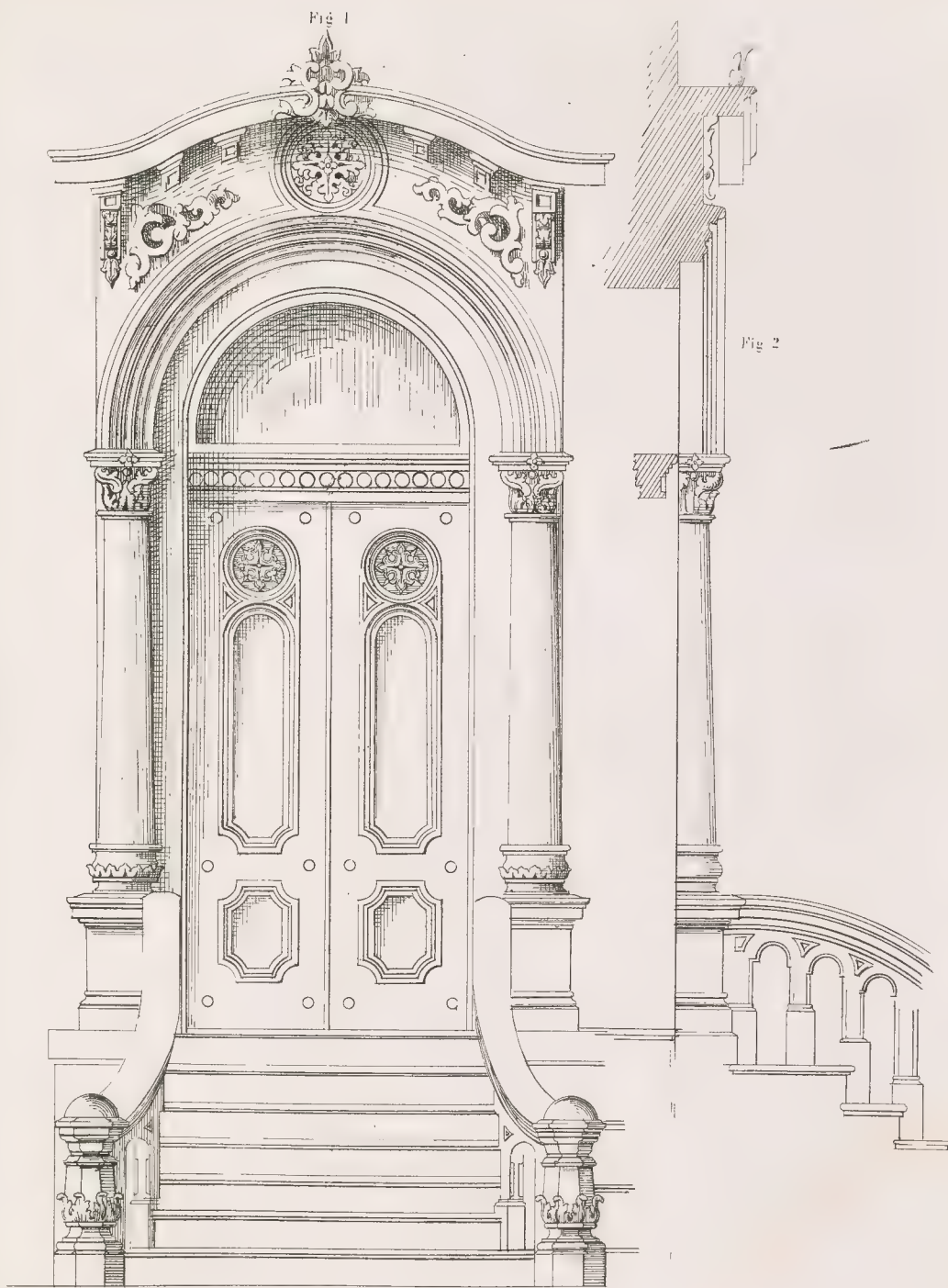


Fig. 4.

DETAILS

Scale 1/2 inch to the foot



Scale 1/2 inch to the foot

DETAILS.

over the laundry. The position of the bath-room, and general arrangement of the apartments, are clearly shown on the plans.

On the third floor there are three chambers and a bath-room, which is located immediately over the one on the second floor. That portion of the building front, which on the second floor is all in one room, is here divided into two parts. The divisions of the fourth story are the same, without any bath.

Fig. 1, PLATE 9, is a detail section of third and fourth story front wall, cornice, and windows. Figures 2, 3, and 4, elevation of the same.

Fig. 1, PLATE 10, is the second story window, and Fig. 2 is a section of the same. Fig. 3, first story window. Fig. 4, basement window.

Fig. 1, PLATE 11, is the elevation of the front doorway, while Fig. 2 shows a section and profile of the same.

We subjoin an outline SPECIFICATION.

The cellar will be excavated to the depth of seven feet clear of the joists, and the earth removed from the grounds. The foundation trenches will be sunk at least eight inches below the cellar bottom, or deep enough to insure permanency.

The party walls will be thirteen inches thick; that is, six and a half inches on each side of the party line; those on front will be twenty-two inches, and on the rear of main building eighteen inches; and flank and rear of the rear building thirteen inches in thickness,—all built up to the level of the pavement line with good quarry building stone, laid on their broadest beds, in good mortar. The division wall at the rear of the main building, the fire-proof foundation, and the piers and arches for the support of the partitions above, will be of hard brick, built on broad flat stone or concrete, laid in the trenches. All the exterior walls, from the pavement line upward, will be brick, and none less than thirteen inches thick except those of the laundry, which may be nine inches. The front is intended to be faced with ashlar of Picton, or other stone, which must not be less than six inches thick and well cramped with iron to the inner wall. The dressings and cornice will also be of stone, all well dressed and carefully set. The mortar for the brick-work will be made of clean sharp sand and fresh lime.

All the flooring-joists will be three by twelve inches, placed sixteen inches between centres, and all exceeding ten feet in length will have a course of lattice bridging through the centre, and must be well blocked up on the wall over the whole surface of their bearings. The ceiling-joists will be three by eight inches; the rafters three by five inches, placed about two feet apart, and boarded over closely and prepared for a tin roof; all studding for partitions three by four inches, set edgewise and well secured at top and bottom. The floors will be of the best Carolina heart-pine, mill worked, well seasoned, and securely nailed to the joists; those of the front building, first and second stories, will all be smoothed off; the rest will have the joints carefully dressed. The main stairs will be of ash or heart-pine; the steps one and a quarter inches thick, tongued, glued, and blocked to the risers, and well supported on strong carriages; they will have a black-walnut rail of four by two and a quarter inches, and a ten-inch octagon

newel of the same material; the balusters will be two and a quarter inches diameter, of fine ash. The rear stairs will be of Carolina heart-pine, constructed as above described, except that the newel, hand-rail, and balusters, will be of smaller proportions.

The front window frames will be made reveal, and of black-walnut; the sash one and three-quarter inches thick, of the same material, hung with best patent cord, weights, and sham-axle pulleys; those for the first and second stories front, require inside shutters one and three-quarter inches thick, to slide on brass sheaves and ways, as shown on PLATE 10. The frames on the rear and flank of the rear building will be reveal, with rectangular heads; the sash one and three-quarter inches thick, and hung as the others. These windows will have outside panel-shutters on the first story, and pivot-blinds on the second, all well hung with good shutter reveal hinges, and secured shut with eight and ten inch bolts, and open with good back-holders.

The front doors will be made folding, of best black-walnut; the stiles and rails composed of two thicknesses, screwed together; they will be hung with four by four inch plated butts and secured with an eight-inch mortise rebate lock, with plated knobs and two plate flush-bolts. All the doors of the first and second story front building will be of the same material, two inches thick, also hung with plated butts, and where folding, secured with flush-bolts and mortise rebate locks, with plated knobs, etc. The flank entrance door will be made of white-pine, two inches thick, hung with four by four inch butts, and secured with a good mortise lock. The remaining doors will be made of white-pine, one and a half inches thick, hung with three and a half by three and a half inch butts, and secured with good locks. All the above doors will be panel, and moulded on both sides, except the closet doors, which will be moulded on one side only.

The dressings for the windows and doors in the first and second stories of the front building will be eight inches wide, with a neat band-mould. The front windows will have elbow-jambes and panel-backs. The wash-boards will be ten inches wide with a two and a half inch moulding planted on the top. In the other rooms the doors and windows will have dressings five inches wide with a band-mould, and the wash-boards will be six inches wide and moulded on the top. All closets will be fitted up with suitable shelves, pin-rails, etc.

All the walls and ceilings throughout will have two coats of brown mortar and one of white, hard finish. A cornice girting twenty inches, will be run in the hall and drawing-room, and one of fourteen inches in each of the rooms of the second story of front building, and up the stairway. An oval centre-piece of three and a half by six feet will be placed in each division of the drawing-room, two of smaller dimensions in the hall, and one in the dining-room; a circular one of two feet diameter in the front room on the second floor; also, wherever drop-lights occur, will be placed a centre-piece of at least one foot in diameter. All the mortar for the plastering must be composed of good sharp sand and fresh wood-burnt lime, and all lath sound and free from bark.

Marble mantles of approved pattern will be provided and set one in each division of the drawing-room, and one in each of the second and third story rooms, one in the dining-room, and one in the servants' hall. All the wood-work that it is usual to paint will have three coats of

best white lead, and pure linseed oil, boiled. The pine doors of first and second stories will be grained oak or walnut, and receive two coats of good varnish; all the wood-work done in ash and walnut will receive three coats of varnish on the natural color of the wood. The doors of the third and fourth stories will be done in plain colors, tastefully varied and contrasted. The glass for the front will be French plate, the rest will be American, of the best quality, well bedded, bradded, and back-puttied.

Water will be introduced through suitable pipes to the kitchen-sink and bath-rooms. A wash-basin with marble top placed in each of the bath-rooms. The bath-tubs and sinks lined with copper, tinned and planished, and the bath-room fixtures throughout, except for the kitchen, should be plated. All necessary stop and draw cocks provided and properly arranged. A galvanized iron circulating boiler and water-back will be attached to the kitchen-range, to supply hot water for the sinks, bath-tubs, and wash-basins.

Gas will be introduced, through pipes of sufficient size, to all the rooms. A drop-light will be placed in the front vestibule and two in the hall, as also at each landing of the stairs. Each division of the drawing-room will have a chandelier with twelve burners, and two side-lights. There will be two side-lights to each of the rooms on the second and third stories of the front building. The principal dining-room and library will each have a drop-light of four and eight burners respectively, and the kitchen, laundry, and servants' hall each a drop and side-light. All other rooms, including baths and butler's pantry, will have one burner each.

The roof will be covered with the best leaded roofing tin, painted on both sides, the upper side with two coats; and the gutters arranged so as to convey the water to four three-inch conductors built in the wall, as shown by the dotted lines, PLATE 9, Fig. 1.

All locks, bolts, etc., and such hardware as may be necessary to complete the building, will be provided of good quality.

Double doors for the fire-proof, anchors for the walls, and all incidental iron work, will be provided as required during the construction of the building.

DESIGN III.

PRIVATE BANKING-HOUSE.

THE liability to destruction, by the devouring element, of buildings constructed in the common mode, is often a source of serious anxiety to the owner, and more particularly so when a conflagration rages in the immediate neighborhood. Fires are, in many cases, unavoidable accidents; often originating in the interior of buildings, they are not perceived till too late to save them, by the most efficient machinery, from total destruction. The malice of the incendiary often seeks to immolate to its cruel appetite structures in which the owner has invested his fortune, and to whose security he has intrusted all the property in his possession. Innumerable instances have occurred in which men of considerable wealth have been reduced in a few hours to an unenviable state of pecuniary circumstances. It therefore becomes desirable that means should be employed in the construction of buildings designed particularly for the security of valuable property, to render them proof against the ravages of the destroyer. In no way can this be effected but by the use of incombustible materials, of which stone, brick, and iron are the principal; hence, modes of construction differing from those employed in ordinary buildings must be adopted.

The drawings given under DESIGN III. for a private banking-house, are intended to illustrate the construction of a building thoroughly fire-proof without and within. The front elevation, PLATE 12, may be reckoned among our nearest approaches to Italian, and from the peculiar form of its details, is particularly adapted to brown stone. This material, which is found of beautiful shades in New Jersey and Connecticut, is now used to a considerable extent for public and private buildings, and is applied with excellent effect to churches in the Gothic style. Its peculiar color requires deep relief, and where this cannot be given, sharp, decisive lines, to give that effect so necessary to architectural beauty.

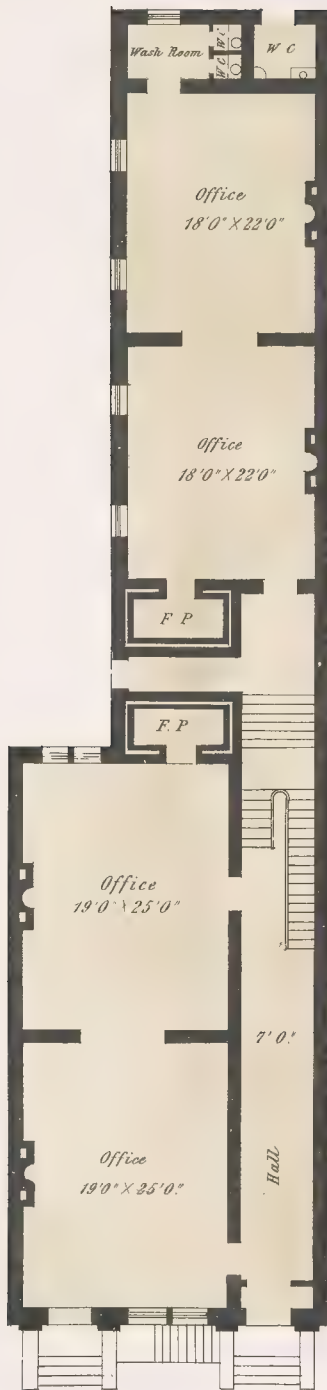
The corrugated roofing, referred to in the specification, is a great advance in the construction of a fire-proof building. The trussing, which appears somewhat complicated in the drawing, is simple, but nevertheless effectual. To make the roof still more free from the liability of rust, the sheets may be galvanized; this is done in all cases for the best class of buildings.

On PLATE 13 are found the plans of the first and second stories, and on PLATE 14 a longitudinal section of DESIGN III., which will render our description at once intelligible. The front building is three stories high with a basement beneath, and the rear building is two stories high with cellar beneath it, corresponding in depth and communicating with the basement in front.

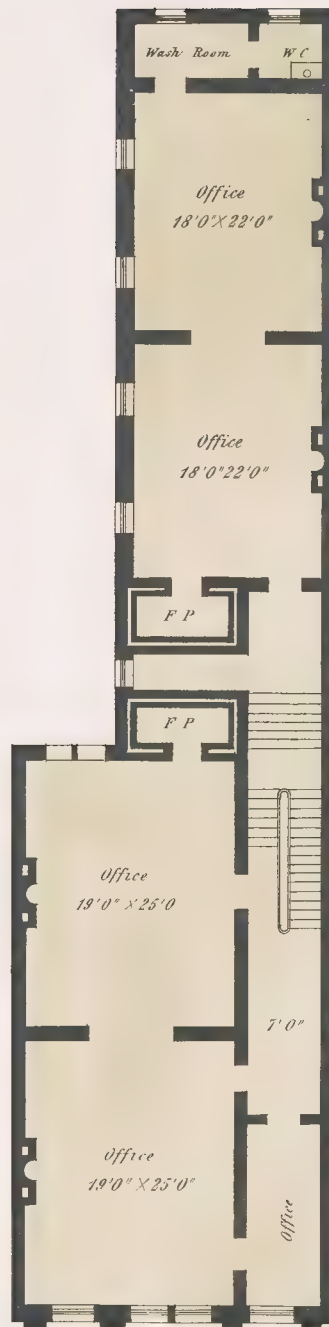


FRONT ELEVATION

Scale 8 Ft to one Inch

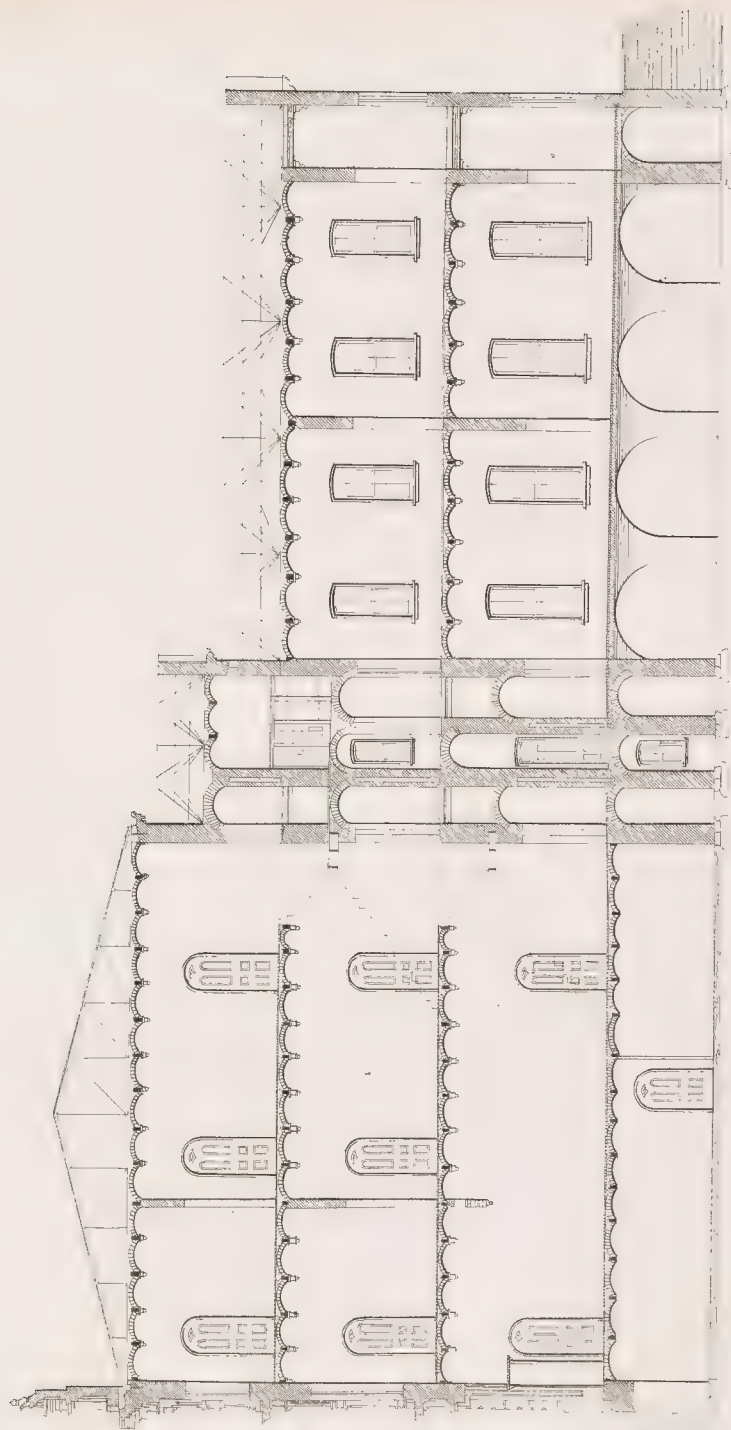


FIRST STORY.



SECOND STORY.

Scale 12 feet to the inch



LONGITUDINAL SECTION.

Scale 1/2" to one inch.

Fig. 1.

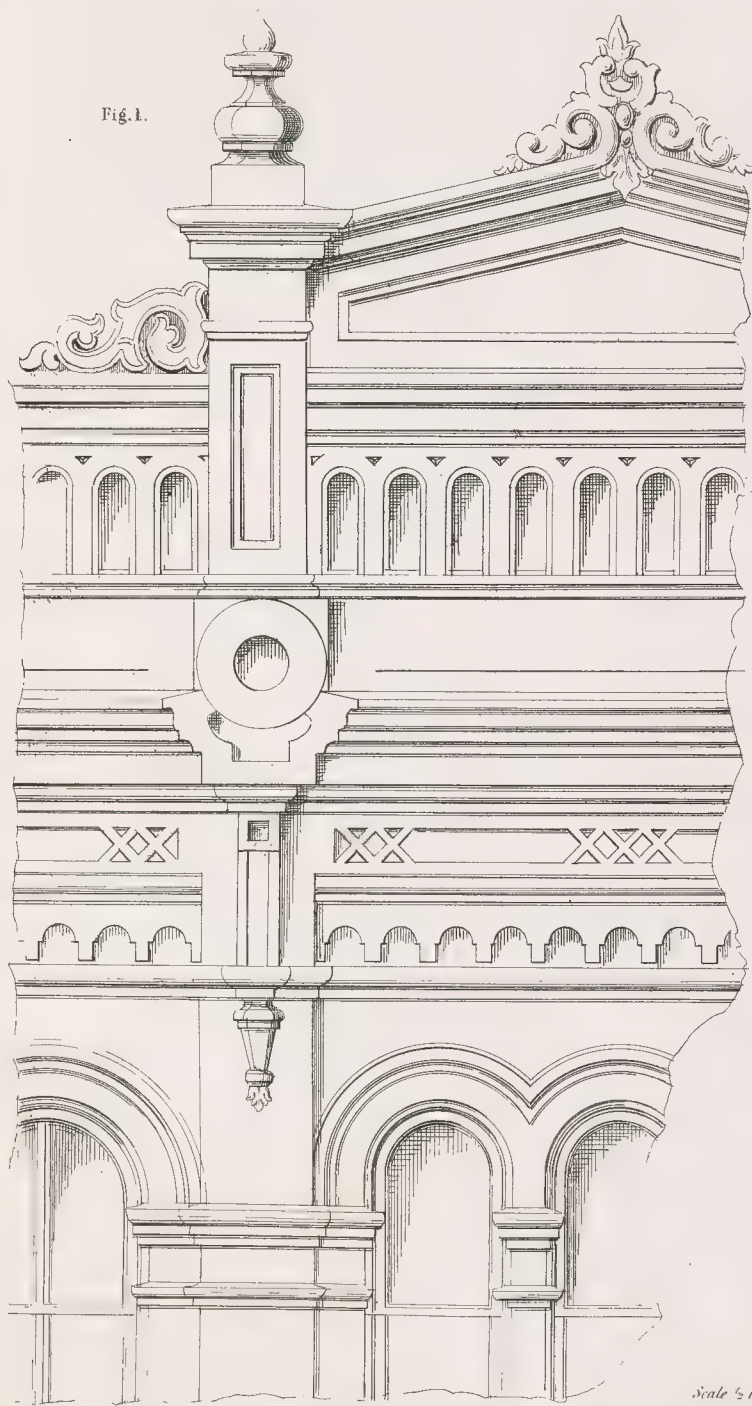
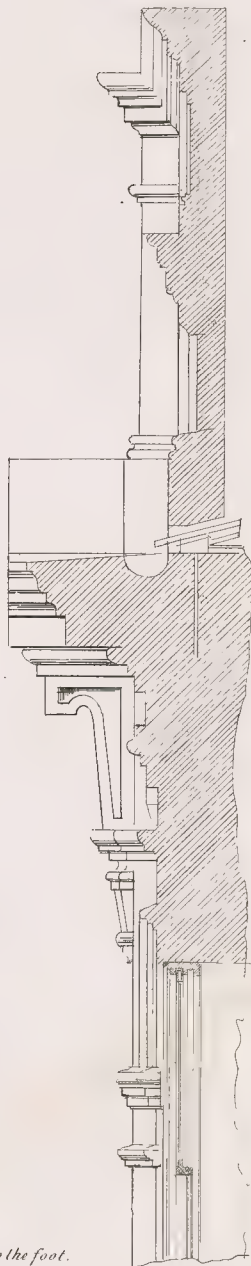


Fig. 2.



Scale 1/2 inch to the foot.

DETAILS.



Fig. 1.

Fig. 2.

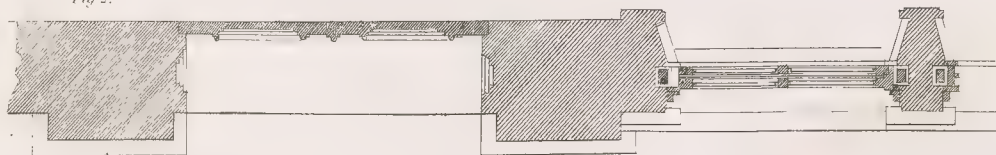
Scale 1/4 inch to the foot.

DETAILS.

Fig. 1.



Fig. 2.



DETAILS.

Scale half an inch to the foot.

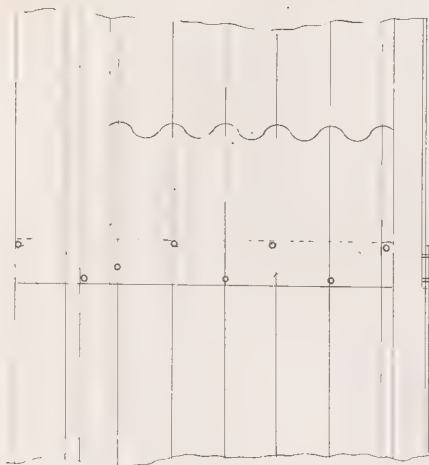


Fig. 1.

Scale to Fig. 1. one inch to the foot.

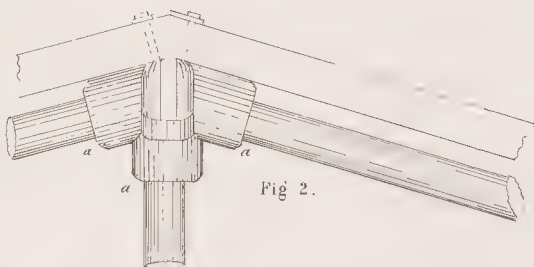


Fig. 2.

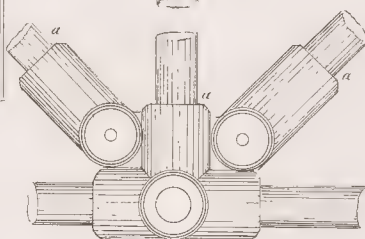


Fig. 3.

Scale to Fig. 2 and 3 $\frac{1}{2}$ full size.

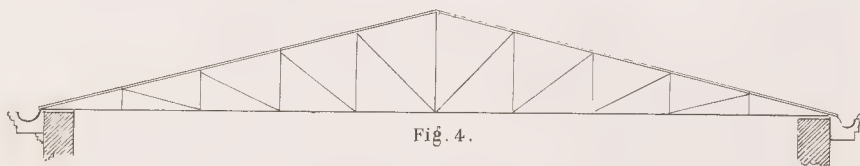


Fig. 4.

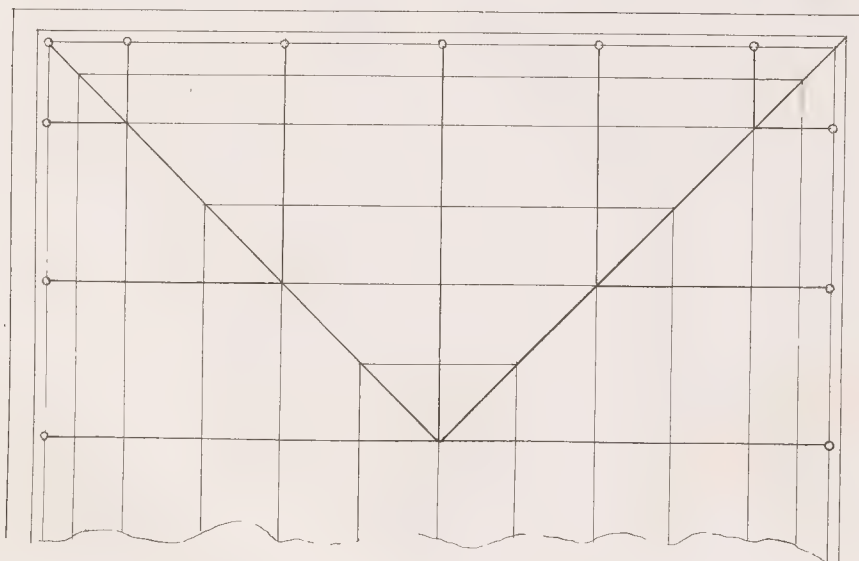


Fig. 5.

Scale to Fig. 4 and 5. $\frac{1}{2}$ of an inch to the foot

DETAILS.

Fig. 5.

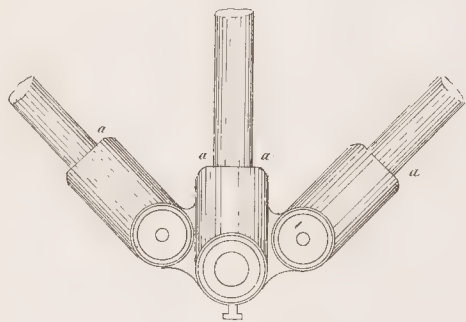


Fig. 1.

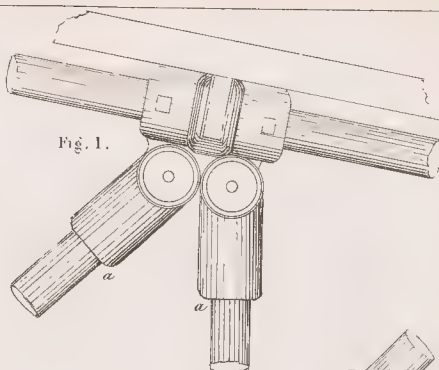


Fig. 2.

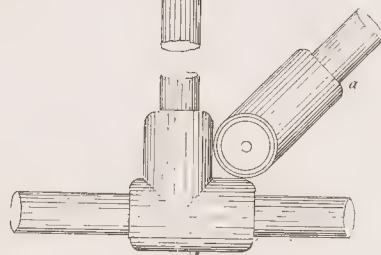


Fig. 4.

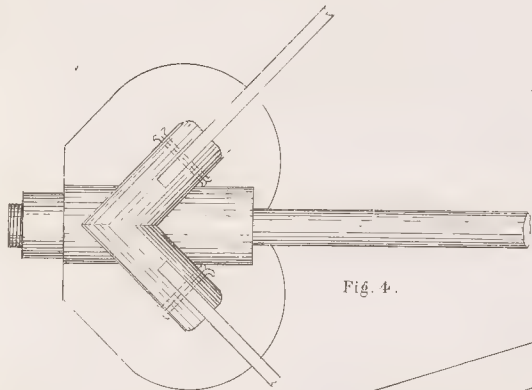
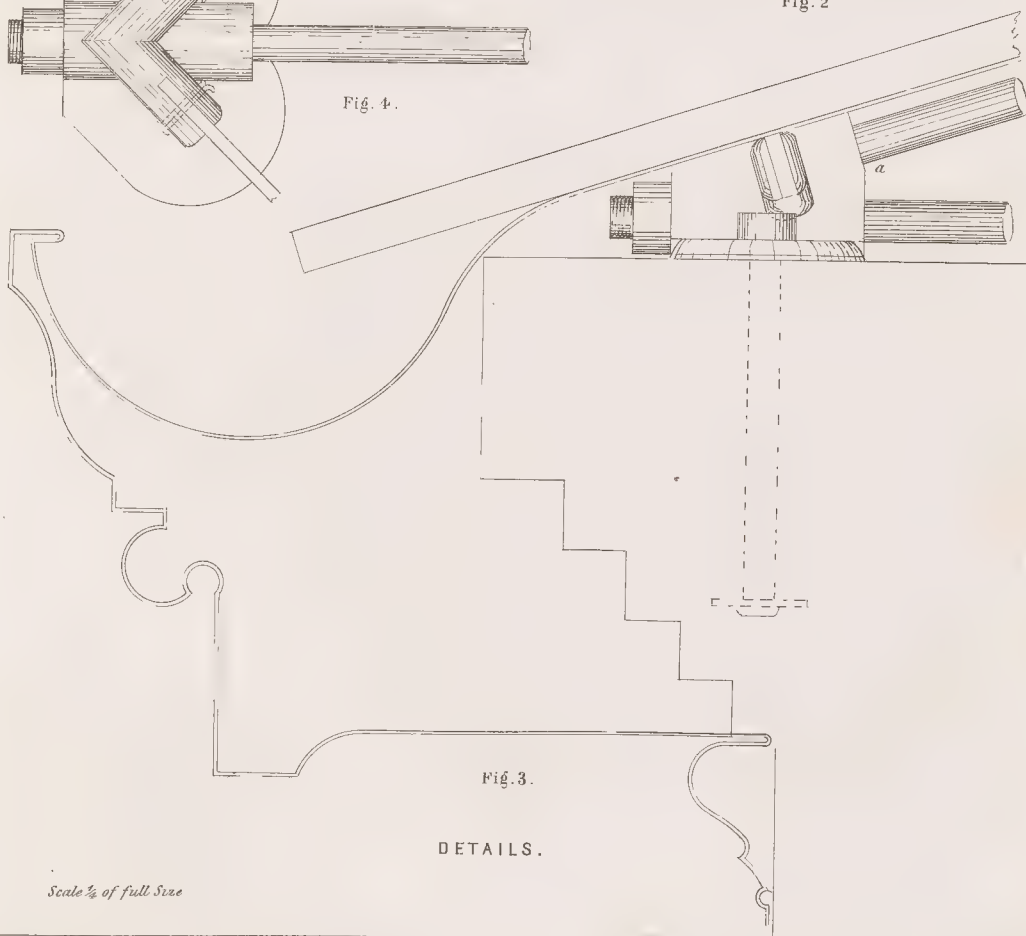


Fig. 3.

DETAILS.



Scale $\frac{1}{4}$ of full size

Heavy piers project from the side walls of the cellar, from which spring the arches; an arch running longitudinally through the centre is intersected by four barrel arches running transversely, as seen in the section. This part may be used for coal-bins, furnaces, etc. The fitting up of the basement, as described in the specification, presupposes that the offices in the main building will be heated by a "low-down" grate in each, in which case it will be very suitable for a restaurant; otherwise a portion of it must be occupied by furnaces, unless the steam or hot-water system is applied.

On the first story is a hall, from which the offices in the main building can be entered from the side, should it be necessary to keep the other front entrance closed. In this hall is the stairway, which is continued to the third floor, and under which are the stairs to the basement, all of iron. Under the half-landing of the stairway is a passage of ample dimensions to the offices in the rear. Between the fire-proofs is a passage to the yard, which is understood to be inclosed with a substantial brick wall, leaving also a passage to the water-closet, entered from the rear. The second floors of the front and rear buildings are reached by an equal number of risers from the half-landing of the stairs, and are provided with their respective fire-proofs. On the half-landing of the stairway, extending to the third story, are the closets and wash-rooms for the use of the second and third stories of the main building, the position of which may be seen on the section. The divisions of the third story are similar to those of the second.

Fig. 1, PLATE 15. Details of blocking-course, cornice, and third story window; Fig. 2, a section of the same.

Fig. 1, PLATE 16. Details of second story window and two belt cornices; Fig. 2, a section of the same.

Fig. 1, PLATE 17. Details of front door and window; and Fig. 2, plan of the same.

Fig. 1, PLATE 18. Sheets of corrugated roofing; Fig. 2, apex hub; Fig. 3, central-girder hub; Fig. 4, pitch of roof; Fig. 5, plan of the same.

Fig. 1, PLATE 19. Purlin hub; Fig. 2, accidental-brace hub; Fig. 3, cornice and elevation of wall-plate; Fig. 4, plan of diagonal or hip plate; Fig. 5, girder hub.

At a a a a a the round iron is screwed into the hub.

For a full understanding of the mode of construction the reader is referred, in addition to the plans, to the accompanying complete specification.

SPECIFICATION

Of the workmanship and materials required in the erection and completion of a private banking-house that shall be thoroughly fire-proof.

GENERAL DIMENSIONS.

The main building will be twenty-nine feet front by fifty-four feet deep, and three stories high, with a back building twenty feet wide by sixty-nine feet deep, including the walls, and two stories high. The height of the first story will be sixteen feet; of the second story fifteen feet, measuring from floor to floor; and of the third story thirteen feet, in the clear. For the dimensions and general arrangement of the divisions, reference may be had to the plans, upon which they are figured and fully explained.

EXCAVATIONS.

The cellar will be excavated throughout the entire extent of the building, to the depth of nine feet in the clear of the joists in the front portion, and the same depth in the clear to the crown of the arches in the rear building. The trenches for the foundations will be at least one foot deeper than the cellar bottom, or of greater depth, should the nature of the ground require it, in order to insure a permanent foundation; and the yard must be graded to a proper level for the intended line of the pavement. Excavate also an area in the front for the basement story, and sink two wells for drainage and soil-pipes, to the depth of water gravel. The earth from the excavations must be removed from the ground and adjoining streets at the completion of the building, which must also be left in a condition ready for occupancy.

MASONRY.

The outer walls of the cellar, and also the foundations for the division walls and piers which support the groined arches, will be composed of quarry building stone, of a good quality. The side walls will be of sufficient thickness to build an eighteen-inch wall thereon, if no party-walls exist; otherwise it must be sufficient for the support of a nine-inch wall, with an offset of three inches. The front wall will be two feet nine inches, the rear wall of the main building will be two feet, and the yard and rear wall of the back building will be twenty-two inches thick. All the outer walls will be built to the level of the pavement line, and all the foundation-courses will be of large flat stone, well and solidly bedded in mortar. The mortar for the masonry will be composed of clean coarse sharp gravel and fresh lime, and all facings will be smoothly dashed with the same material.

BRICK-WORK.

All the walls of the rear building, from the level of the aforesaid stone walls, will be constructed with brick of a good quality, and will be nine inches thick where party-walls exist, and eighteen where none exist, to the height of the first story, and four and a half inches less in thickness from this line to the roof. The cut

stone on the front will be backed in with thirteen inches of brick-work; the rear wall of the main building will be eighteen inches thick to the level of the third floor, and thirteen from thence to the roof. The walls of the fire-proofs will be thirteen inches on the exterior and four inches on the interior, with a hollow space between them. The division walls in the cellar will be thirteen inches thick, and the same throughout the stories above. That portion of the cellar beneath the rear building will be arched with groined arches of brick, which will be supported by piers, projecting from the sides of the building. These arches will be thirteen inches at the skew-backs and four and a half inches at the crown. The fire-proof will be arched with nine-inch arches at each floor and ceiling, and all the floors above the cellar, except the first floor of the rear building, will be arched with four and a half inch arches, built between and resting on the flanges of wrought-iron beams, hereafter described under the head of iron-work. The brick throughout the cellar and for all of the arching must be hard-burnt, and laid in cement-mortar. All the external facings of the exterior walls will be laid Flemish bond, with good quality of pressed brick. All openings throughout the building will be arched; those on the rear will be segmental. The yard will be paved on the side of the back building with good paving brick, laid on gravel at least six inches deep, and will be inclosed on the rear and side with a thirteen-inch fence wall, which will be capped with stone of proper thickness and wash. All flues will be properly constructed, and so arranged that warm air from furnaces can be supplied to all of the rooms, and separate gas-flues either for grates or stoves; and they must all be well pargetted on the inside with good mortar and topped out the proper height above the roof. An ash-bin to each set of jambs will be constructed in the cellar. All the mortar for the brick-work will be composed of clean bar-sand and fresh lime.

CUT STONE.

The entire front, from the pavement line to the top, including the cornice, balustrade, and facings in the area, will be of cut stone, and executed in the best and most workmanlike manner, in accordance with the design and accompanying details. The door sills, window sills, and all lintels, and the necessary steps to the pavement on the rear, will be of stone; also the steps to the basement in front. The water-closets on the rear will be flagged; and also the fire-proof bottoms, which will be each in one stone, four inches thick; also, the front pavement will be flag, of a proper thickness for vault-covering.

FLOORS.

All the floors will be leveled up with concrete, two inches above the top of the joists; the basement will be leveled with the same material, at least six inches in depth. On this preparation encaustic tiles of suitable and varied pattern will be laid with cement, in the best manner.

IRON-WORK.

All the floors (except that of the rear building, having groined arches,) will require joists of wrought-iron, eight inches deep and placed about four feet apart. These must be in one length, and transversely cramped together with iron rods that will sustain the thrust of the segmental arches, and where the said rods enter the walls they must be securely anchored in the best manner. All the segmental window heads will have inside iron sills and lintels of proper strength, and well set in the walls. The front windows will have inside shutters, three-fold, and cut at the meeting-rail of the sash; they will fold into soffits cut in the stone jambs. The rear

windows will have outside shutters with four-inch stiles, moulded and covered with No. 10 iron. The stiles of the inside shutters above described will be three and four inches wide, and covered also with No. 10 iron.

The window frames will be made of iron, for sash one and five-eighth inches thick, which will be balanced with a connecting-cord and single weight, with pulley in the upper end through which the cord passes. The box for this weight will be partly formed by the frame, and the remainder cut in the jamb. The sash will be iron, set in an external frame of wood and fastened with screws; to this frame is attached the cord for balancing. The entrance doors will be of iron, double-lined with No. 6 iron, paneled with mouldings, hung with strong hinges, and secured, with a good three-bolt lock and strong bolts, to the stationary door. The transom-rails will be stone, with sash over them like those of the windows. The fire-proof doors will be of the best, made double, with iron frames and soapstone heads and sills, or iron, if directed. The stairs will be of iron and well constructed, with corrugated steps strongly secured to the risers and wall, and supported by bearers of three-fourth by two-inch iron. The half-landing will be constructed with iron joists and covered with corrugated iron, as the steps. The balusters will be iron and secured to the steps, with a wrought-iron rail of one-half by one and one-half inches riveted on them, to which the mahogany rail is secured. The roof will be constructed with iron, well and substantially put together and covered with galvanized corrugated iron, as explained by the detail drawings. The gutters will be properly constructed, so as to convey the water by iron conductors built in the wall to the wells, or the culvert in the street if a connection can be made. All the iron for anchors, bolts, bars, and stirrups, necessary to make the whole building complete, is to be provided and to be of the best quality. The cellar windows are to have good and substantial iron grating, two of which will be made to open, and will each be provided with strong bolts, hasp, and padlock.

CARPENTER-WORK.

The folding doors between the rooms will be two and a half inches thick, paneled, with raised mouldings, and hung with five by five inch butts, and secured with six-inch mortise rebate locks and two iron-plate flush bolts. Those for the vestibule will be folding, paneled beneath and with glass above the lock-rail, hung with four by four inch butts, and secured with two iron-plate flush bolts and a four-inch mortise rebate lock. The single doors will all be one and three-fourth inches thick, with six panels each, neatly moulded, and hung with four by five inch butts, and secured with four-inch mortise locks. The jambs will all be two inches thick, with a neat band-mould of three inches in width. The water-closets will be fitted up properly with plank seats and risers and hinged lids; the doors to them will be one and a half inches thick, paneled and properly hung, and secured with locks. The hand-rail for the stairs will be of the best walnut, three and three-fourth by two and a quarter inches, and firmly fixed on the iron hand-rail, to which the balusters are secured. All centering for the arches will be made and set by the carpenter, and all the carpenter work necessary to make the building complete must be done in a substantial and workmanlike manner.

PLASTERING.

All the walls and ceilings throughout the building will receive two coats of brown mortar and one of white, hard finish. The intrados of the arches will be plastered on the brick and retain their segmental form. Under the end of each joist where it intersects the wall will be placed a bracket of stucco of a neat ornamental pattern. The mortar for the plastering will be composed of clean river-sand and fresh lime, well mixed with slaughtered hair.

CEMENT.

All the wash-boards throughout the building will be of cement, six inches wide in the basement, eight on the first story, seven on the second, and six on the third, and all three-fourths of an inch thick, and neatly moulded.

PLUMBING.

Seven self-acting water-closets will be constructed, four on the second half-pace of the stairs, one on the second story, and three on the first, fitted up with wash-rooms adjoining. Each water-closet will have a reservoir to contain and discharge a given quantity of water; the soil-pipes will be five inches in diameter and discharge into the wells excavated for that purpose; a ventilating pipe of the same dimensions will connect the soil-pipe with a ventilating flue, in order to produce a downward ventilation. A wash-basin will be fitted up for each story, with China bowls, having counter-sunk marble tops and neatly finished stands, with plated fixtures. All the pipes will be extra strong, with the necessary stop, drain, and waste cocks, and appropriate fixtures. A wash-pave will be required on the front and also one in the yard.

PAINTING AND GLAZING.

All the wood-work that it is usual to paint will require four coats of pure white-lead and best linseed oil, and all the doors will be grained oak and varnished; the hand-rail of the stairs will also require three coats of the best varnish. The glass for the entire front, including that for the vestibule doors, will be plate; the rest will be best American, double thick, well bedded, bradded, and back-puttied. The lower edges of the iron joists will receive three coats of white-lead and linseed oil, and the iron window frames, sash, shutters, entrance doors, and stairs, will be bronzed.

HARDWARE.

All locks, bolts, and hinges, as described under the head of carpentry, and all other hardware necessary to make the building complete, must be of a good and suitable quality.

GAS-PIPE.

The pipe for the gas will be so arranged that a drop-light can be had from the ceiling of each room, including the basement, and also two side-lights to each. All to be left in a good condition for connection with the meter and burners.

MANTELS.

Each room of the first and second floor will require a mantel of good pattern, the cost of which should average about fifty dollars, all set in the best manner.

FINALLY.—The contractor is to furnish, at his own cost and expense, all the materials and workmanship necessary to the erection, construction, and completion of the building, according to the true intent and meaning of this specification; the materials to be of good and approved quality, and the workmanship to be done in a good and workmanlike manner.

DESIGN IV.

A C H U R C H.

AS CHURCH-BUILDING is universally regarded in Christian countries as a very important branch of architecture, it will necessarily, in a work like the present, claim no small part of our attention. It is in this department of our favorite art the architects of the middle ages particularly excelled. Many of their works still stand in the glory of their pristine beauty, containing in their composition all the elements necessary to the construction and embellishment of a Christian house of worship. From the material thus afforded, it is the mission of the modern architect to select and combine such portions as accord with modern taste and convenience, and to adapt them to surrounding circumstances, which are generally much dissimilar to those under which they were first applied. Here is ample room for the display of talent; although the forms of beautiful detail are unchangeable, and no new ones can be invented, the infinite pleasing varieties of combination that may be given them is work for the architect for all time to come.

The perspective view given on PLATE 20 is of a church, in which several features of the Norman and Gothic styles are combined with a harmonious and pleasing effect. The length of the building, including vestibule and recess on the rear, is ninety-nine feet, and the width across the vestibule is sixty-four feet, and all two stories in height. On each side of the main entrance is a stairway leading to the audience-room, and continued up to the gallery, which extends around three sides of the audience-room.

In the basement are a lecture-room, school-room, and two smaller rooms for primary meetings; rear of these are two flights of stairs, which lead to the gallery and the platform on which stands the pulpit. PLATE 21 shows the front, PLATE 22 the flank elevation, and PLATE 23 the ground plans. The transverse section, PLATE 24, gives a view of the pulpit and recess in the rear; and the longitudinal section on the same plate gives a connected view of the ribbing, gallery, and all the interior arrangements; while PLATE 25 is a section, looking toward the front, with one-half of the partition omitted, thus showing the elevation of the stairway to the audience-room and gallery.

The appearance of the interior of this church, if the design be faithfully carried out, is well calculated to please; all the work bears a character of massiveness that will not fail to leave impressions of grandeur and strength on the mind of the beholder. The softening of the volumes of light by stained glass adds still more to the effect by casting deep, yet beautifully blended shadows; and though Deity may not "dwell in temples made with hands," yet the mind, under



PERSPECTIVE VIEW.



FRONT ELEVATION

Scale of 16 ft to one Inch.

Sam^r Sloan, Arch^t

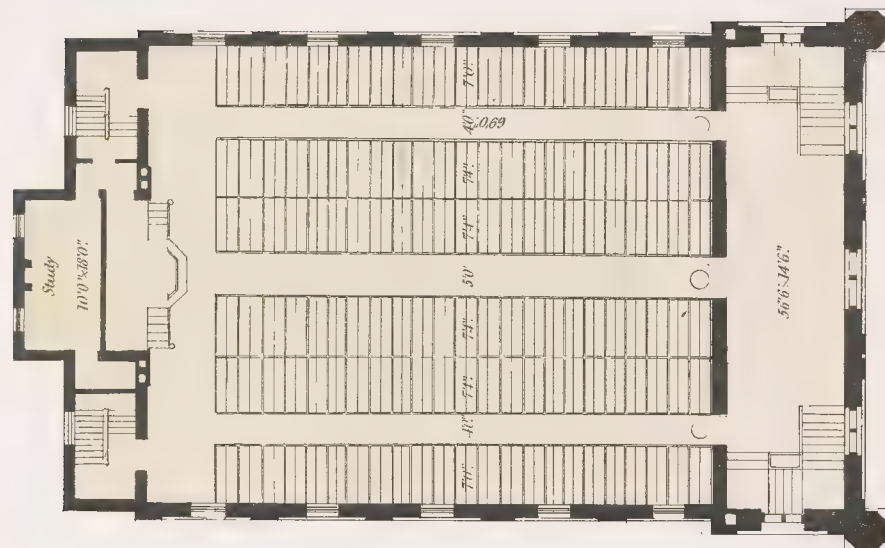
W. H. Mason & Co. 111 N. 3rd St. Phila.



FLANK ELEVATION.

Scale 16 feet to one inch

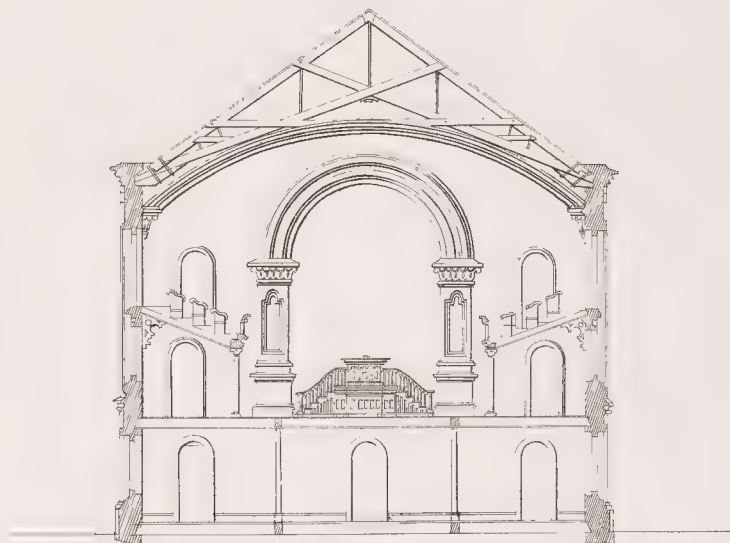
J. P. WATKINS, ARCHT.



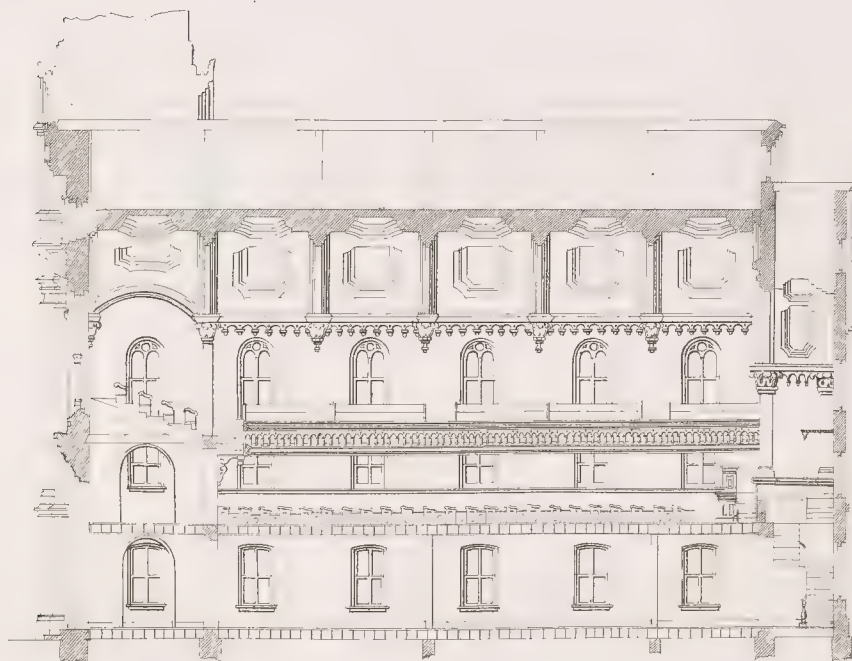
PRINCIPAL PLAN.

Sam^l Sloan Archt

J F Watson's Lith Phila



TRANSVERSE SECTION.



LONGITUDINAL SECTION.

Scale 16 ft to one inch

Wm. Clark Archt

F. Watson, Lith. PL 24

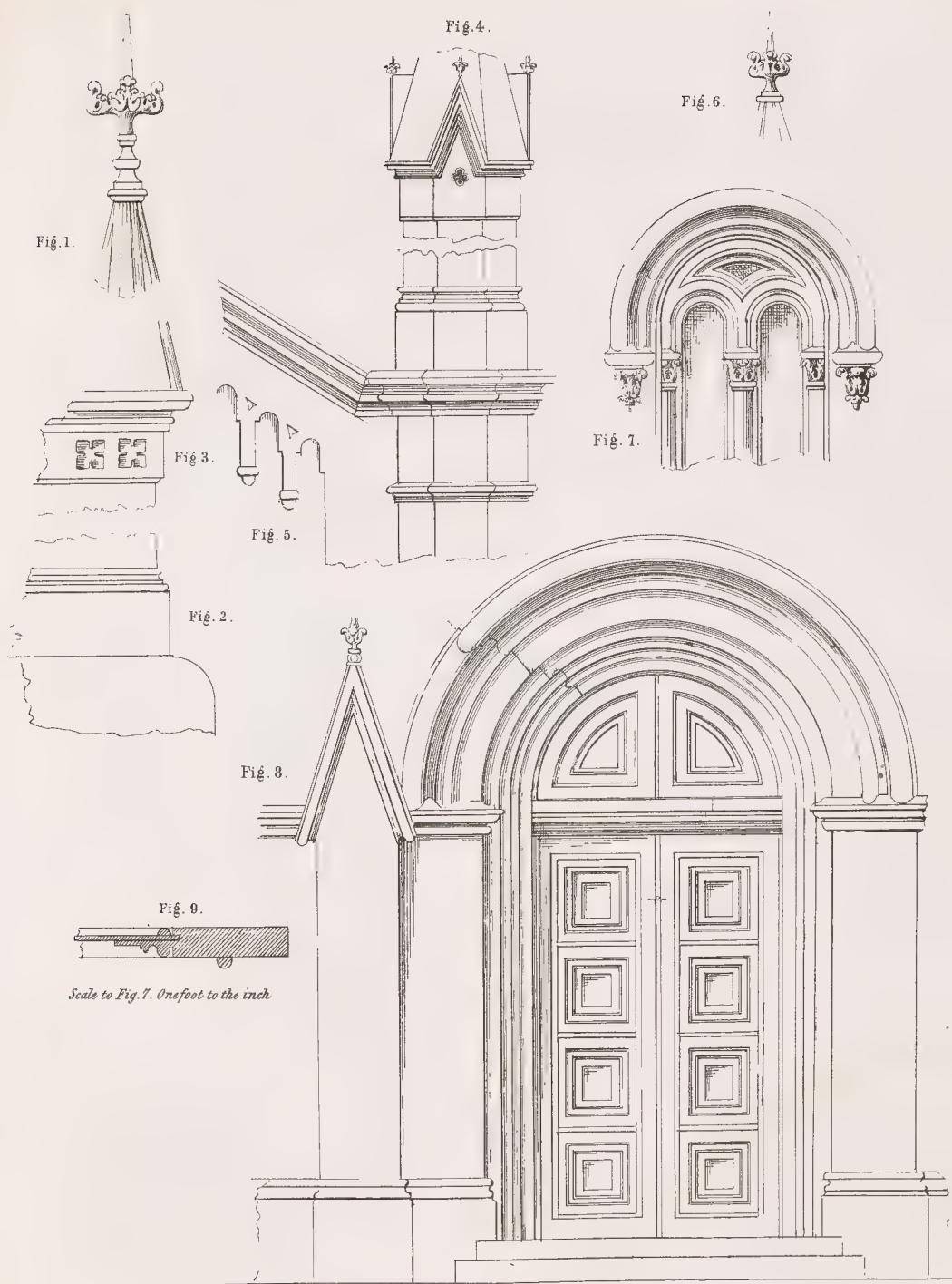


TRANSVERSE SECTION
LOOKING INTO FRONT VESTIBULE

Scale 16 feet to 1 inch

Sam^d Sloan, Arch^t

J F Watsons Lith Phil^a



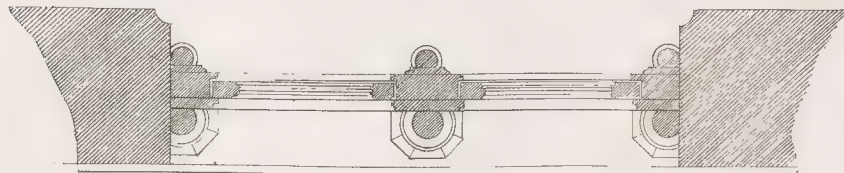
Scale 4 feet to one inch.

DETAILS.

Fig. 1



Fig. 2



Sill, half an inch to the foot

Fig. 1.

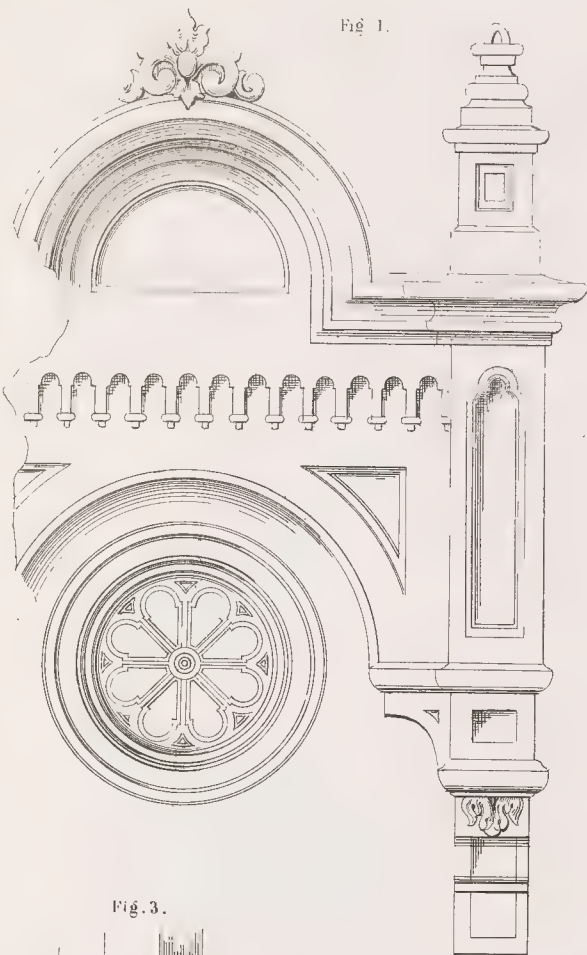


Fig. 2.

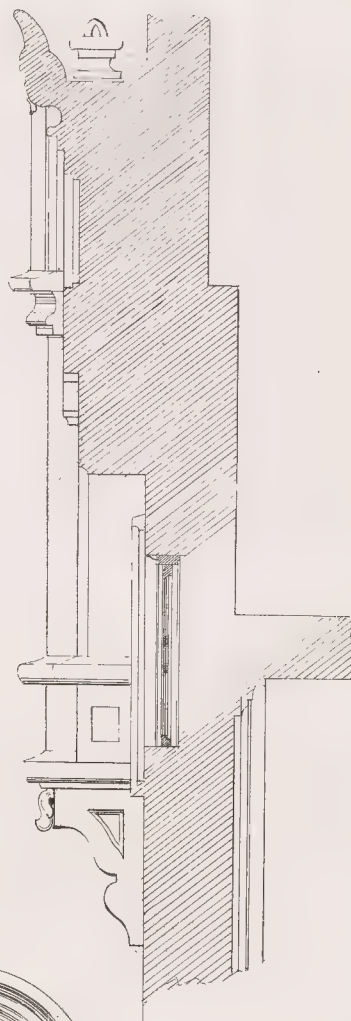


Fig. 3.

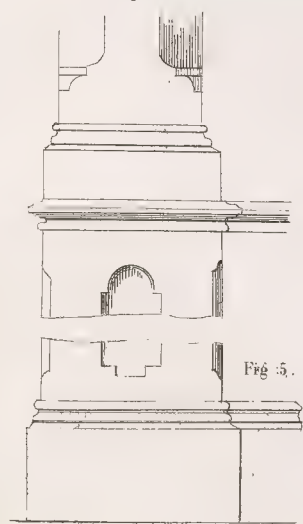


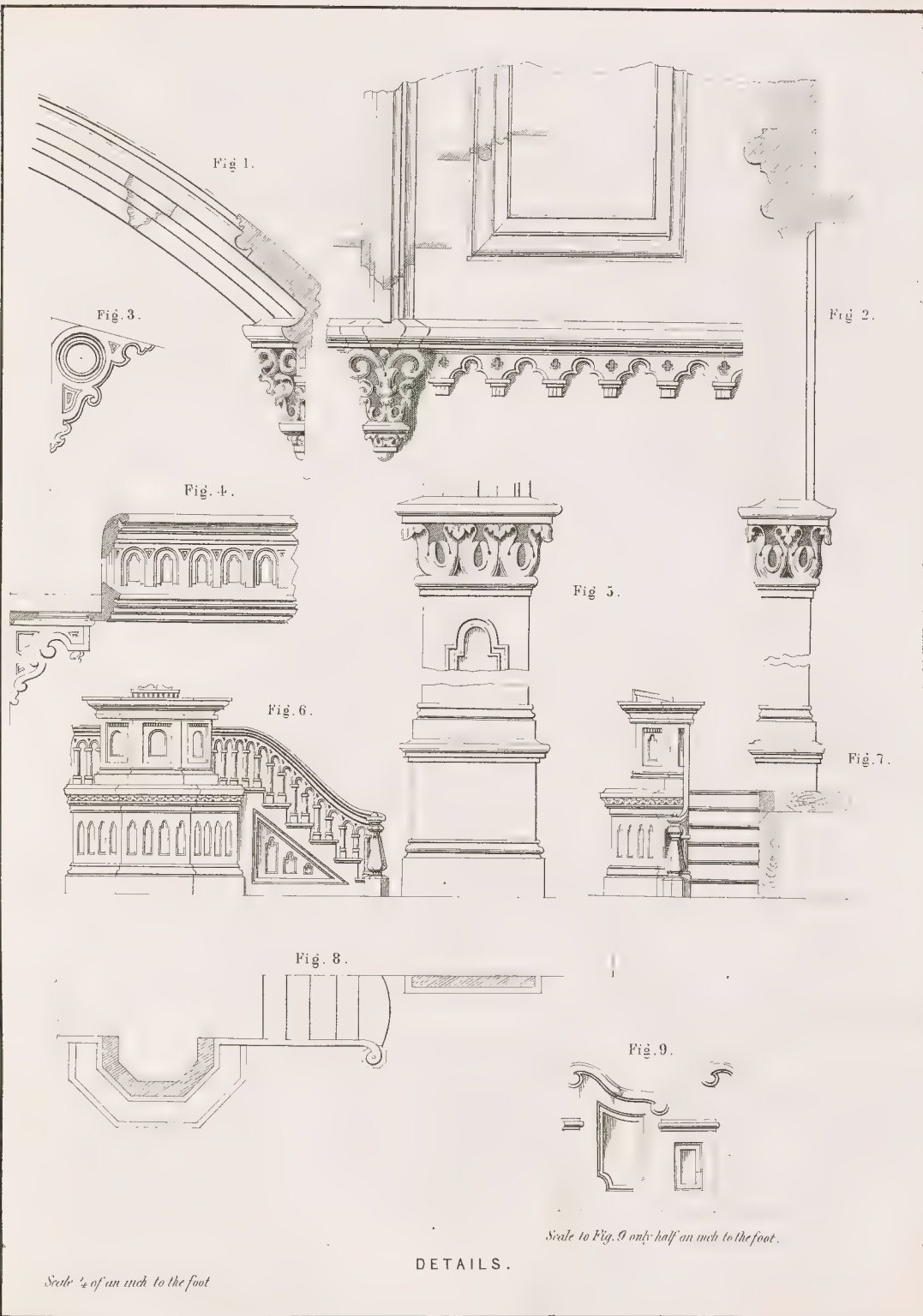
Fig. 5.

Fig. 4.



DETAILS.

Scale 4 feet to one inch.



these combined circumstances, more readily adapts itself to the true performance of religious worship than in the broad glare of day.

On PLATE 26, Fig. 1 is the finial, Fig. 2 the base, and Fig. 3 the cornice of the belfry; Fig. 4, pinnacle; Fig. 5, roof-cornice; Fig. 6, finial of pinnacle; Fig. 7, one of the front windows; Fig. 8, main floor; Fig. 9, section of door stile.

Fig. 1, PLATE 27, is the central front window, and Fig. 2 is a plate of the same.

On PLATE 28, Fig. 1 shows the projection of the base of belfry; Fig. 2, a section of the same; Fig. 3, base of octagon buttress; Fig. 4, one of the smaller entrance doors.

PLATE 29 exhibits details of the interior. Fig. 1 is a rib; Fig. 2, ceiling and corbel table; Fig. 3, bracket under gallery; Fig. 4, gallery railing; Fig. 5, front view of pilaster at the recess; Fig. 6, front view of the pulpit; Fig. 7, a side view; and Fig. 8, a plan of the same; Fig. 9, end of a pew.

For the use of the builder, we subjoin the following compact

SPECIFICATION

Of the workmanship and materials to be employed in the erection of DESIGN IV.

GENERAL DIMENSIONS.

The building will be sixty-four feet front across the vestibule, and one hundred feet deep from face to face of the walls, including vestibule and recess on the rear. The floor of the basement will be fourteen inches above the pavement line, and the height of the story twelve feet in the clear. On this floor is a lecture-room, two school-rooms, with a small room in the rear. The audience-room and vestibule will occupy the entire second story. The height of the audience-room, from the floor to the springing line of the arch, will be twenty-six feet.

For the divisions and arrangement of the several apartments, reference is to be had to the plans and sections, upon which they are accurately drawn and figured.

EXCAVATIONS.

A cellar will be excavated throughout the entire extent of the building, seven feet deep in the clear when finished; and the foundation trenches sunk one foot below the cellar depth, or deeper, should the nature of the ground require it, to arrive at a permanent foundation. All the earth must be removed from the premises and adjoining streets at the completion of the building. Four wells must be sunk in the cellar for the reception of rain water, each of five feet diameter, and in depth three feet below water gravel; these will be bricked up with hard bricks of single thickness, and arched over below the surface of the cellar with nine-inch arches of hard brick laid in good mortar.

MASONRY.

The walls of the cellar throughout will be composed of quarry building-stone of a good quality. The foundation course must be large and flat stones with good beds; those for the outer walls must be of the full width of the wall, and well imbedded in mortar, of which there should be at least four inches in depth, filled in the trenches before laying the stone. The walls on the flanks and front will be two feet nine inches thick; the rear wall of the body of the building will be two feet three inches, and those of the recess will be one foot nine inches, all built up with stone to the level of the pavement line. The foundations for the piers in the cellar will also be stone, and built two feet six inches square; all the stone for the masonry must be laid upon their broadest beds; none to be edged in any part of the walls, and all laid with mortar composed of clean, sharp gravel and fresh lime. All the facings are to be smoothly dashed, and all openings left for cellar windows, doors, pipes, drains, or other purposes that may be required and directed during the progress of the work.

CUT STONE.

The front steps, platforms, and sills, and the door sills on the rear; all the window sills, the base-course on the front and flanks, and the water-table near the level of the audience-room floor, will be of brown stone, free from defects of any kind, and dressed and set in the best manner.

BRICK-WORK.

All the walls from the aforesaid stone walls will be constructed with brick, of a good and approved quality. The flanks and the front walls will be twenty-two inches thick up to the level of the audience-room floor, and eighteen inches thick from thence up to the roof. The rear wall will be eighteen inches thick from the stone walls up to the roof, and the wall on the rear of the recess will be thirteen inches thick throughout, including the cross-walls. The above thicknesses are through the body of the walls; the projections are all in addition. The brick for the front will be the best quality of pressed brick, laid in the best manner and of uniform color. The rear and the flanks will be good dark stretchers, also laid in the best manner; moulded and beveled brick are to be used wherever necessary. The piers in the cellar will be hard brick, and twenty-two inches square from the stone foundations up to the girders. The mortar for the brick-work must be composed of the best river sand and fresh lime, properly proportioned.

CARPENTRY.

The joists of the basement and audience-room floors will be spruce and hemlock, three by twelve inches, placed twelve inches between centres; and each floor will rest upon two girders of ten by twelve inches, running from front to rear. Those girders in the basement floor will be supported by piers, and those of the audience-room floor will rest upon the cross-partitions and iron columns to each, which latter will be supported by the piers above described. The joists should be let into the girders one inch and down eight inches, and notched over the girder, so that the remaining four inches reach over the top of the girder, to receive the flooring. Each tier of joists will require one course of lattice bridging through the centre; the ends resting on the walls should be solidly blocked up. The joists of the audience-room will also require two by three inch scantling nailed across the top, twelve inches apart, for the purpose of elevating the pews two inches above the aisles. The gallery joists will be three

by ten inches, placed sixteen inches between centres, well secured to the walls and framed into a girder on front. The girders will be six by twelve inches, each to be in one length, substantially trussed with seasoned oak, and supported in the centre with an iron column four inches in diameter. At the connection of the side with the end gallery the angles will be filled out to form a small quadrant, and the front neatly finished according to the drawings.

The platform for the pulpit will be elevated at least four feet above the level of the audience-room floor, with scantling of suitable sizes properly framed and secured together.

All the ceiling-joists and common-rafters may be hemlock; the timbers for the framing of the roof, the belfry, and the girders, must be of the best white-pine, and properly framed and secured together with suitable iron bolts, as represented in the sectional drawings.

FLOORS.

The floors throughout will be of the best quality of Carolina heart-pine, one and one-fourth inches thick, mill-worked, well-seasoned, and well nailed to the joists, and afterwards smoothed off.

STAIRS.

The principal stairs will be substantially constructed, having steps one and a half inches thick and the risers one inch, all yellow-pine, of the best quality; the carriages must be strong and well secured, and the steps tongued, glued, and blocked to the risers and let into the wall-string. The rail will be two and a quarter by four and a half inches, moulded and inclosed with panel-work beneath instead of the usual balusters, and continued up to the gallery. Two flights of stairs will be required on the rear, which will extend from the basement up to the gallery—one of these to communicate with the pulpit. The steps to these will be one and one-fourth inches thick, of yellow-pine, also let into the wall-string, and secured to strong carriages. The rail will be two and one-fourth inches, moulded, with plain balusters.

WINDOWS.

The window frames will all be made for sash one and three-fourth inches thick, double hung with best axle pulleys and patent cord, and filled in with lead quarries for diamond glass.

DOORS.

The front doors will be three inches thick, paneled and moulded, as represented by the drawings, and hung with five by five inch butts, three to each door. Those of the main entrance will be secured with two iron-plate flush bolts, and an eight-inch upright mortise rebate lock; the others will have four iron-plate flush bolts to each. All the other doors, single and folding, (except those opening into the audience-room,) will be made six-panel, one and three-fourth inches thick, moulded, hung with four by four inch butts, and secured with suitable locks, and those which are folding with flush bolts. Those opening into the audience-room, front and rear, will be framed one and a quarter inches thick, be made flush for cloth covering, and be hung with three by three inch butts, and provided with springs, hooks, staples and handles.

WAINSCOTTING.

The audience-room will be wainscotted around the wall up to the line of the window sills, with narrow grooved boards, well secured to the wall; and all that is not wainscotted will require a wash-board of ten inches in width, including a one and three-quarter inch moulding.

DRESSINGS.

All the openings will require, on the interior, a neat moulding around them, including those in the basement and recess; all the jamb-casing for the doors will be two inches thick, and well secured to the wall-plugs and floor.

The cellar windows will all be glazed, the sash being hinged to a narrow casing, and secured with bolts. A flight of stairs to the cellar will be constructed in the usual manner, under one of the rear flights. A platform will be required in the lecture-room with a neat pedestal pulpit. The girders in the basement to be neatly cased and cornered.

PLASTERING.

All the walls and ceilings will be plastered with two coats of good brown mortar and one of white hard finish. The cornice, panels, ribs, and corbel table in the ceiling of audience-room are explained by the details. The mortar for the plastering must be composed of clean sharp river-sand and fresh lime, well mixed with slaughtered hair. All lath to be sound and free from bark.

ROOF.

The roof will be overlaid with the best quality of slate, laid diamond and plain alternately, and properly pointed between the lath. The spire of the belfry will also be slated, and done with slate of contrasted colors, cut in diamond form. The gutters will all be laid with the best quality of leaded roofing tin, painted on both sides, the upper side with two coats, and so arranged as to convey the water to two conductors on each flank; these will be iron, built within the walls, and discharge into the wells in the cellar. All the projections around the belfry must be tinned, and all tin-work, including flushings, must have one coat of paint on the under side before it is laid.

PAINTING.

All the wood-work on the exterior will have four coats of paint and two of sand, corresponding in color with the stone used for the window sills and water table, except that herein specified to be grained, viz.: the front doors, and all the door frames and window frames on the exterior, which will be done in oak, and receive two coats of best varnish. Also, all interior wood-work will be grained in imitation of oak, and receive three coats of varnish.

GAS-FITTING.

The pipe for the introduction of gas will be concealed in the walls, and of a sufficient size for the requisite number of burners, which are as follows: Two chandeliers, of eighteen lights each, in the audience-room; three bracket lights on the gallery front opposite to each pier; two stand lights for the pulpit, of three burners each;

two at the entrance, of three burners each; two single burners in the vestibule; one to each stairway; and four lights on the end gallery. In the basement—ten lights, in the lecture-room, four lights at the desk of the same, eight lights in each school-room, two lights in each small room on the rear, and one on each flight of stairs, all to be properly arranged and left in a condition ready for connection with the meter and burners.

HARDWARE.

All the hardware, locks, bolts, etc., described under the head of carpentry, and necessary for the entire completion of the building, including anchors for the walls, rods for the construction of the roof, will be provided of good and approved quality. Iron columns will also be provided, for the support of the girders and the gallery.

GLAZING.

All the windows of the audience-room, and also the front windows, will be glazed with stained-glass, in diamond pattern, with Bohemian border. The windows of the basement may be plain American or colored glass; all of the best manufacture.

FINALLY.—The contractor is to finish, at his own cost and expense, all the workmanship and materials necessary to the entire completion of the building in all its parts; the material to be of good and approved quality, and the workmanship to be done in a good and workmanlike manner.

DESIGN V.

AN ITALIAN RESIDENCE.

It would require a volume of no small size to fully relate the history and discuss the merits of the beautiful style of architecture now universally known as the Italian. But considering its beauty, appropriateness, and ready adaptation to almost every kind of building, both with regard to construction and ornamentation, we cannot forbear a few remarks on its origin and application.

It dates back to the fourteenth century, but prevailed extensively during the fifteenth, from which circumstance it is sometimes designated the Cinquecento style. It must be understood that the term Italian does not include every style of building found in Italy, but is limited to a style springing from the ancient Roman or classical architecture. After the decline of the Roman empire its architecture was modified to what is commonly termed the Romanesque style; the cities of Italy were adorned with edifices in either the Byzantine or Lombardic manner, as their intercourse preponderated with Byzantium or Rome, the Lombards being then masters of the latter.

Although the Gothic or pointed style was not introduced into Italy until comparatively a late period, yet it may be considered as having been the prevailing style during the thirteenth century. The Ducal Palace at Venice forms a fair example of the pointed style as it existed previous to the revival of the Roman method. This edifice is three stories in height, the lowermost one of which has eighteen simple pointed arches, springing from low stunted columns; above this is an open gallery of thirty-six small pointed ogee arches, having the intrados formed in the shape of a trefoil. In the centre of the upper arcade is a large balcony, on each side of which the wall is formed of masonry, jointed diagonally, in which are six large pointed windows. The centre of the building is terminated by an attic crowned with statues, and the horizontal cornice is terminated with a pierced battlement. This style of building was, however, destined soon to be displaced by another. About the close of the thirteenth century, a new cathedral was to be built at Florence, which was begun on a grand scale, A.D. 1298, by Arnulfo di Lapo. His design was of an original character, and differed materially from the then existing style; this difference was, however, greatly increased by the alterations of architects who succeeded him on the work, among whom may be reckoned the names of Giotto, Taddeo Gaddi, Andrew Orgagna, and Felippo di Lorenzo. A meeting of architects having been called by the citizens, A.D. 1408, to consider the best means for finishing the cathedral, Brunelleschi appeared with his bold proposal to raise the dome, and it was he who completely effected a revolution in architectural style; this edifice, known as the Cathedral of St. Maria del Fiore, attracted great attention; and, as a consequence, had a powerful influence toward changing the style throughout Italy. This change is termed the revival of Roman art, yet the designation does not give a clear idea of the mode of building prevalent in Italy during the fifteenth century; it was not a reintroduction of the old classic styles, but rather an adaptation of classical details to buildings of an entirely different character, disposition, and arrangement.

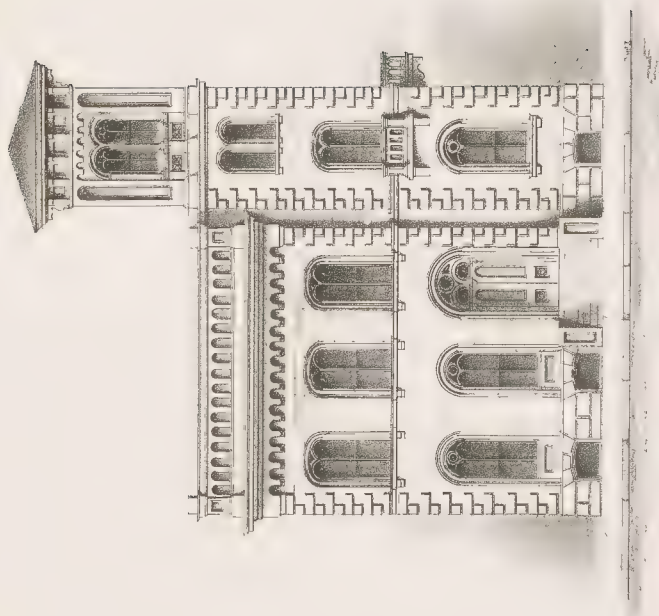
One of the main points in which Italian differs from purely classical art, is its partiality for fenestration, or the introduction of windows, so as to form a marked feature in the design. The lighting of apertures had become indispensable, and in some Italian structures was carried to such an excess that the windows and their external ornamentation occupied almost the entire façade, leaving but little space of naked wall. This employment of windows furnishes us at once with a feature of very great importance, and for ordinary buildings of greater importance than that of columniation. The two systems are in some degree antagonistic to each other, and cannot readily be made to harmonize, for fenestration either interferes with the intended effect of columniation or reduces it to an inferior and secondary position; in short, to a mere means of decoration, which is fully evidenced in the use of engaged columns, pilasters, and the employment of small columns for the adornment of only *parts* of the structure. In the latter mode has it been employed by the Italians; and in viewing the beautiful edifices erected in accordance with this principle, we have no cause to regret its application.

DESIGN V. is an example of astylar Italian, so termed from the absence of columns and pilasters, fenestration being here introduced to their entire exclusion. The arched apertures, the



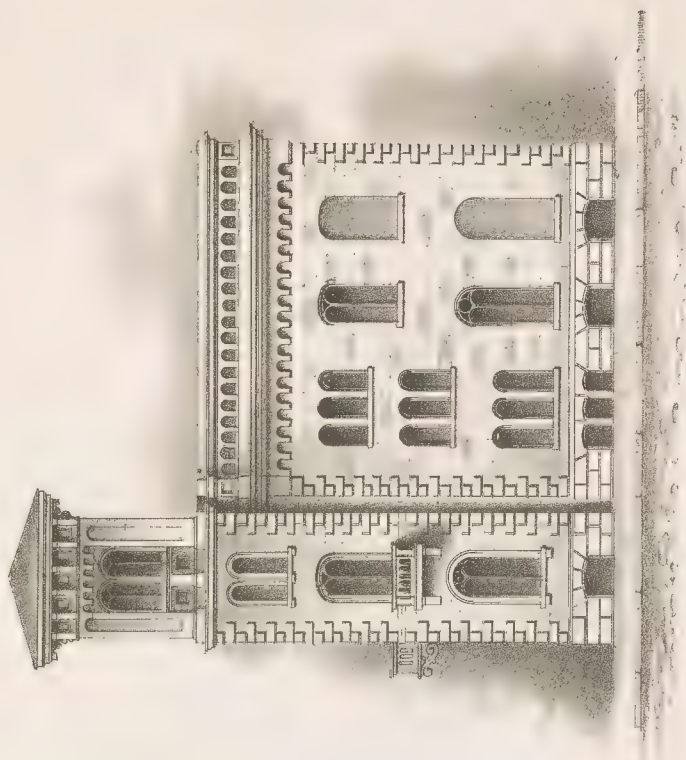
PERSPECTIVE VIEW

PLATE 30.



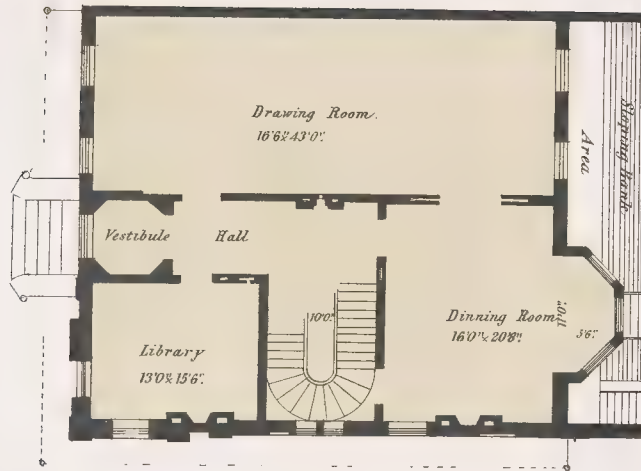
FRONT ELEVATION

Architect: J. H. ...

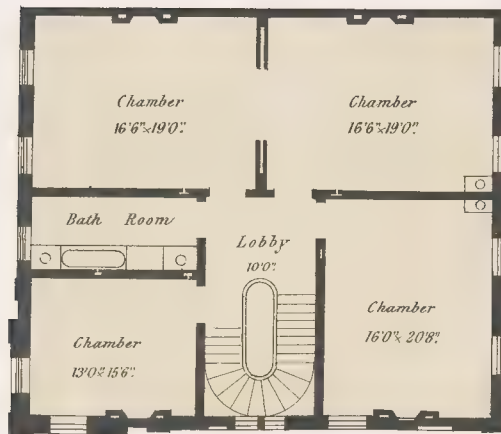


W. & A. C. 1.

J. F. Watson's Lib. Phil.



FIRST STORY.



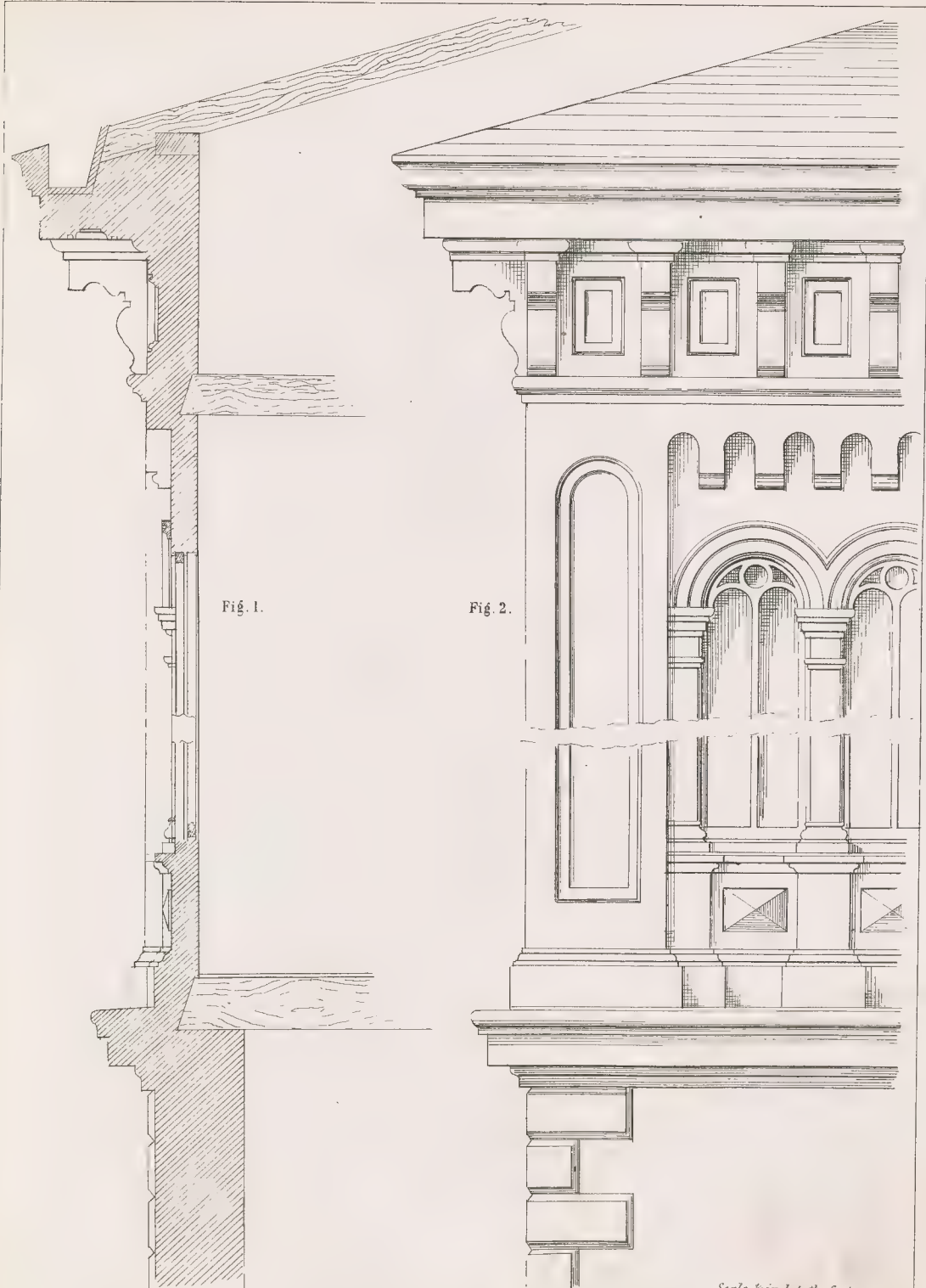
SECOND STORY.

Scale 12 feet to one inch



CROSS SECTION.

Scale 8 feet to one inch



DETAILS.

Scale $\frac{1}{2}$ inch to the foot

Fig. 1.



Fig. 2.

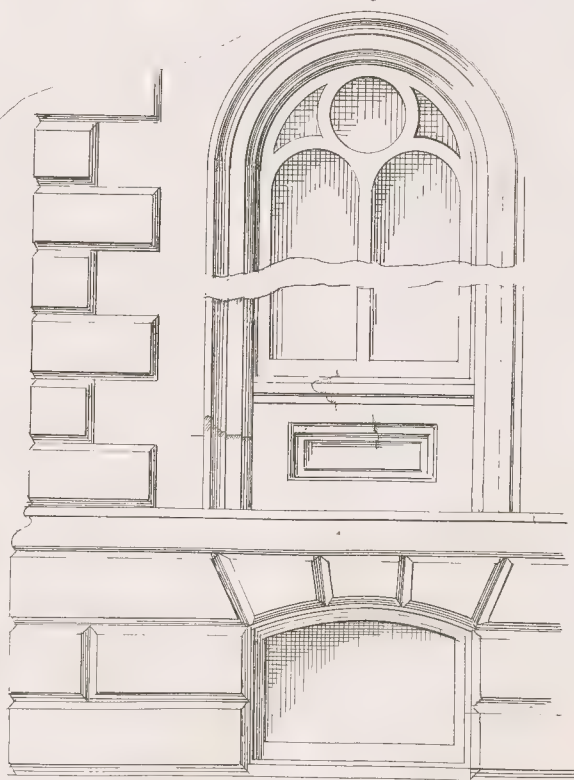
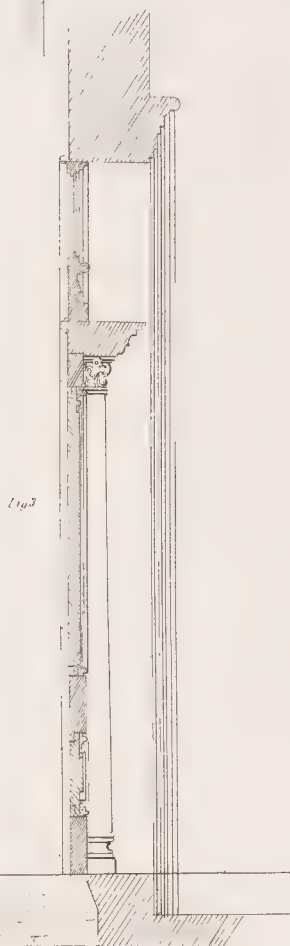
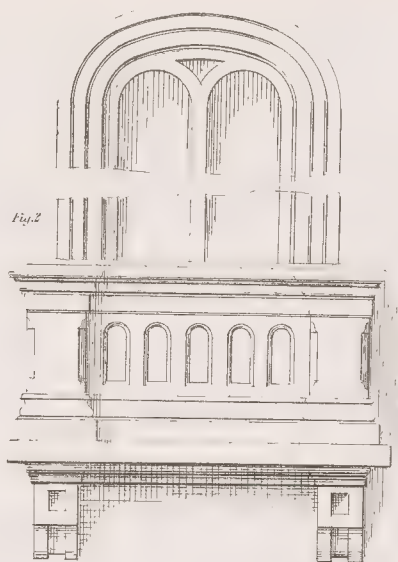
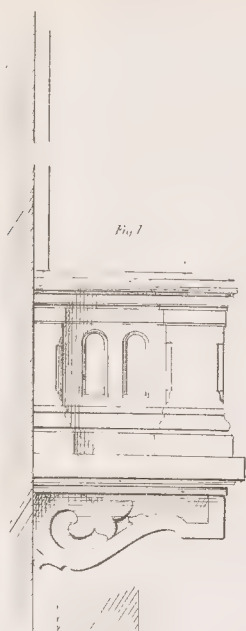


Fig. 3.



Scale 1/2 inch to the foot.

DETAILS.



DETAILS

Scale 2 inch to the foot

$\int_1^2 \frac{1}{x^2} dx = -\frac{1}{x} \Big|_1^2 = -\frac{1}{2} - (-1) = \frac{1}{2}$

projecting cornice, and most of all the campanile, with rustic quoins and low-pitched roof—in fact, every feature that tends to make this edifice beautiful, is of Italian origin. This design should be executed in stone of a light, cheerful color, of which the Pictou or Acadian freestone is a fair example.

PLATE 30 is a perspective view, taken at such an angle as to display the front and flank to equal advantage; their geometrical elevations will be seen on PLATES 31 and 32.

With the aid of the plans, PLATE 33, cross section, PLATE 34, and the following description and specification, the merits and construction of the building may be clearly understood. The building is two stories high, with a basement and attic. The basement is divided by walls corresponding with, and supporting those of the hall above, into three parts, of which the one beneath the library may be used for a coal cellar; the narrow one beneath the hall contains the heating apparatus; the other may be applied to the common uses of a cellar. The rear portion, hereafter termed the basement, comprises a kitchen, kitchen pantry, provision vault, and laundry, with necessary closets and appendages, more fully described in the specification. The plan of the principal floor needs little explanation, except that the butler's pantry is closed off under the stairway, and communicates by stairs with the kitchen, and by a dumb-waiter with the pantry beneath. The divisions of the second story are also clearly exhibited, and those of the attic correspond so nearly with them as to need no further description. The height of the stories and the depth of the provision store is delineated on the cross section.

PLATE 35 is filled with details of DESIGN V. Fig. 1, section of tower cornice, with window and tower base; Fig. 2, elevation of the same.

PLATE 36, details. Fig. 1, main cornice; Fig. 2, first story window, and Fig. 3, a third story window.

PLATE 37 is also of details. Fig. 1, side view, and Fig. 2, front view of balcony window; Fig. 3, section of front entrance, and Fig. 4, front elevation of the same.

SPECIFICATION

Of the workmanship and materials required in the erection of DESIGN V.

GENERAL DIMENSIONS.

The building will be forty feet front by forty-five feet deep, measuring from face to face of the walls, and two stories high, having basement and attic. The principal floor will be four feet above the level of the pavement, the basement being nine feet from floor to floor, when finished; the principal story will be fourteen feet, and the second story thirteen feet from floor to floor; the walls of the attic will be carried seven feet above the floor of the same, and the story will be nine feet in height clear of the collar-beam.

For further explanation of the interior divisions and arrangements, reference must be had to the plans and foregoing description.

EXCAVATIONS.

The excavations will be made throughout the entire extent of the building, of sufficient depth to finish the basement and cellar eight feet in the clear. The foundation trenches must be of sufficient depth to insure solidity. An area will be excavated on the rear as deep as is required, that the top of the pavement therein shall be six inches, or one step below the basement floor. This area will be six feet in width at the bottom, with a bank sloping outward at an angle of forty-five degrees. All superfluous earth to be removed from the grounds and adjoining streets.

MASONRY.

The walls of the cellar will be composed of quarry building-stones, of a good quality, and all laid upon their broadest beds; those for the foundation-course to be large and flat, projecting three inches each way beyond the face of the walls, and well and solidly bedded in mortar. The exterior walls will be two feet thick at the level of the pavement line, and leveled off for the brick-work. The foundations of the division-walls will be twenty inches thick up to the level of the cellar floor, and also leveled off for the brick-work. Foundation-walls for the steps will be required, sunk to sufficient depth to insure their security from the effects of frost. The mortar for the above-described masonry will be composed of good coarse sharp gravel and fresh lime, and all the facings will be well dashed with this material.

CUT STONE.

The two fronts (the building is intended to be located on a corner) will be faced with ashlar, from four to six inches thick, as may be required, of the best Pictou stone, as none that are in any way defective will be allowed in any part of the building. This stone facing will extend from the pavement line up to the bed-mould of the cornice on the two fronts, and to the same height on the tower. The quoins on the angles will project two inches; these and the basement ashlar will be rusticated. The front steps, and those descending into the provision vault, will be of cut stone. Also, balconies supported on brackets, the dressings of the windows and door, (as per elevation and details,) with the angle-quoins on the rear, will be constructed entirely of stone, agreeing in color with the ashlar facing already described. All the foregoing stone-work to be dressed, set, and securely cramped to the brick-work, in the best and most workmanlike manner.

BRICK-WORK.

All the walls that are faced with cut stone will be backed in with brick walls thirteen inches thick, so that the entire wall will be eighteen inches thick. The exterior walls of the cellar will be the thickness of the stone walls up to the principal floor; the division-walls supporting those above will be thirteen inches thick; the other division-walls of the cellar will be respectively nine and four inches thick, as required by their situation. The rear and side walls, from the level of the stone-work to the roof, will be thirteen inches thick. The bricks for the exterior face of the rear wall, and those throughout the cellar, will be hard-burnt.

All flues for warm air, gas, and ventilation, will be constructed as represented by the plans, or as may be directed during the progress of the work; and all be smoothly pargetted inside, topped out with smooth hard brick, and capped with stone.

The cellar and area will be paved with the best paving-brick, laid upon a bed of mortar and concrete not

less than six inches thick. The mortar for the brick-work must be composed of clean river-sand and fresh lime. The joints on the exterior face of the rear wall will have the mortar removed to the depth of half an inch, for the better reception of the rough-casting.

CARPENTER'S-WORK.

The flooring-joists will be three by twelve inches, and placed twelve inches between centres, well cambered, with one course of lattice bridging through the centre of each tier; all to be solidly blocked up on the walls over the whole surface of their bearings; the trimmers around stairs, flues, etc., are to be double in thickness, and pinned together. The rafters will be of the usual rafter cuts, placed sixteen inches between centres, well secured at the bottom to wall-plates of three by eight inches, (which will be bedded in mortar on the walls,) and at the top to a ridge-pole of three by twelve inches; all to be firmly secured together, and boarded over closely with well-seasoned boards, and prepared for metal covering. The collar-beams will be one and a half inches thick, and well nailed to the sides of the rafters. The partitions which are not brick will be constructed with three by four inch scantling, placed twelve inches between centres. The door-studs will be three by six inches, well secured at both ends, and bridged where they exceed nine feet in length. All the above timber may be hemlock, of the best quality and well seasoned.

FLOORS.

The floors throughout will be of the best quality Carolina heart-pine, mill worked, well seasoned, and securely nailed to the joists. No boards must exceed three and a half inches in width, and all the floors to be smoothed off in a careful manner. The first floor throughout will be counter-floored, for deafening, between the joists, by cleating them about four inches down from the upper edge, and boarding crosswise on the cleats.

WINDOWS.

The window frames and sash on the two fronts, first and second stories, and the sash on the rear for the same stories, will be of walnut; and all the frames will be made for sash one and three-quarter inches thick, double hung with the best axle-pulleys, large size, and best patent cord, with suitable weights attached. The rear frames, and those of the upper story of the tower, will be made in like manner, except that they will be white-pine, with heart sills. The inside shutters to all the windows of the first and second stories will be one and a half inches thick, with four panels in width, and also four in height, neatly filleted and moulded. These shutters will all be in two parts in width and height, and slide into the wall on each side on suitable brass ways and sheaves, and secured together by locks similar to those used on sliding doors. The sash to these windows will require lifts and fasteners. The windows in the kitchen and laundry will have inside shutters, paneled, moulded, and hung in the usual manner, and secured with a bar on the inside. The windows on the stairway will differ somewhat from the others; they being of smaller dimensions, will have sash one and a half inches thick, made single, and so arranged as to fly up into the head; these are all intended for stained glass, except the two in the basement, which will be enameled. They will all have panel shutters in two widths, properly hung, so that when opened they form the jamb. The attic windows will also be hung with weights or hinges, having one and a half inch sash, without shutters.

DOORS.

The front doors will be folding, two and a half inches thick, composed of two thicknesses; the outer face will be walnut, moulded and paneled, and the inner face will be bead and flush; these should be hung with five by five inch butts, and secured with an eight-inch mortise rebate lock and two iron-plate flush bolts. The frame for the door will also be walnut, and have a semicircular head-light. The vestibule doors will be folding, and made of walnut, two and a half inches thick, with moulded panels below the lock-rail, and panels of glass, with circular heads, above; these will be hung with four and a half by four and a half inch butts, and secured with a strong vestibule lock and two iron-plate flush bolts. The frame will be neatly moulded, with a semicircular head-light in the upper portion. The drawing-room doors will also be two and a half inches thick, composed of two thicknesses, paneled, moulded, and made to slide on the best six-inch sheaves and iron ways in the head, and secured with the best sliding door locks. The one communicating with the hall will be single, but finished, on the inside of the drawing-room, to correspond with the other pair. The doors from the hall to the library and dining-room will be of the same thickness, etc., but hung with four and a half by four and a half inch butts, and secured with four and a half inch upright mortise locks. The division doors between the chambers on the second story will be similar to the drawing-room doors in every respect. All the others throughout this story, and the one from the dining-room to the private stairs, will be one and three-fourth inches thick, paneled, with mouldings, hung with four by four inch butts, and secured with four-inch upright mortise locks; and all throughout the attic, basement, and butler's pantry will be one and a half inches thick, paneled and moulded, hung with three and a half by three and a half inch butts, and secured with three-inch mortise locks; the door opening to the yard will require two strong additional bolts.

STAIRS.

The stairs will be continued from the first story up to the attic floor, constructed in the best manner, with treads of one and three-quarter inches thick and risers one inch thick, tongued, glued, and blocked together, and let into the wall-string. The rail will be two and a quarter by four and a half inches, moulded; the balusters will be three-inch hexagon, and the newel eight-inch octagon, the whole to be of the best walnut, including steps, risers, and string. The first flight will be inclosed beneath with a panel spandrel, which shuts off the butler's pantry from the hall. The stairs to the basement are beneath these, and will be put up in the usual mode; there will also be a small and convenient stairway from the attic floor to the upper story of the tower.

DRESSINGS.

The doors throughout the first story will require eight-inch architraves, moulded, and the windows will be moulded within the jambs, so as to extend the width of the piers as much as possible. The jambs and bottoms will be paneled and moulded, to correspond with the doors. The jambs for all the doors will be two-inch plank, and for the doors that are hinged will be paneled and moulded. The wash-board throughout this story will be fourteen inches wide, including a three and a half inch moulded sub and a large moulding on the top. The thickness of the sub will be one and three-quarter inches, and that of the wash-board one and a quarter inches. The dressings on the doors and windows of the second story will be six inches wide, and neatly moulded. The jambs of each, and also the bottoms of the windows, will be paneled and moulded. The wash-boards throughout this story will be twelve inches wide, including a three-inch plain sub, and large top-moulding. The attics will be

finished with plain six-inch wash-boards, and plain one and a half inch jambs to both windows and doors, with the rebate strips for the doors nailed on. Those of the basement will be similar to those of the attic. The kitchen will require a dresser, with panel-doors top and bottom, and drawers between them. The kitchen, pantry, and butler's pantry will be fitted up with suitable shelving and such drawers as may be required, with a dumb-waiter from one story to the other, hung with wheel and weight, and inclosed, with a door on each story. The other closets will be fitted up with neat shelving, as desired.

The main cornice and the upper story of the tower will be constructed of wood, in accordance with the drawings, which fully explain them.

The floor of the basement will be laid on three by four inch sleepers, eighteen inches apart, and solidly imbedded in concrete with mortar.

The cellar windows will be inclosed with one and a half inch sash, hung on a narrow frame, with butt hinges, and secured shut with bolts.

PLASTERING.

All the walls and ceilings throughout the building will be plastered two coats of brown mortar and one of white. An enriched cornice will be run in the angle of the drawing-room, to girt thirty inches, with an oval centre-piece, at least six feet long, and of proportionate width. The cornice in the dining-room, reception-room, and library will girt twenty-six inches, enriched as that of the drawing-room.

The library, dining-room, and hall will have centre-pieces, of proportionate sizes and suitable patterns. A plain moulded cornice will be run throughout the second story, with an average girt of about ten inches. The mortar for the plastering must be composed of clean sharp river-sand and fresh lime, well mixed with slaughtered hair, and all lath sound and free from bark.

ROUGH-CASTING.

The rear wall on the exterior will be rough-cast, in the best manner, with the best material, and lined off on the surface in blocks to represent stone, and prepared for painting.

DEAFENING.

The principal floor will be deafened by coating the counter-floor two inches in depth with coarse mortar.

TIN-WORK.

The roof will be overlaid with the best quality of leaded roofing tin, painted on both sides, the upper side with two coats. All the gutters will be properly constructed so as to convey the water to four four-inch iron pipes built within the walls, to convey the water to the culvert.

PAINTING AND GLAZING.

All the wood-work throughout the interior and on the exterior that it is usual to paint, will receive four coats of pure white-lead and best linseed oil, and such parts of the interior done in parti-colors as may be desired. The first story and basement to be grained in the best manner. The main cornice and tower will be sanded two coats, and the rough-casting on the rear will receive four coats of paint and two of sand; all to correspond, in color, with the Pictou stone. All the walnut-work will require three coats of the best varnish.

The glass for the first story front, and for the head and panel-lights of the vestibule and front doors, will be of the best French plate; the flank and rear and all the second story will be "English crown." The small windows on the stairs will be stained glass, of a neat and suitable figure; those in the basement which light the pantry will be enameled; the others in the basement, and those in the attic, will be the best American; and all must be well bedded, bradded, and back-puttied.

HARDWARE.

All the locks, bolts, etc., as mentioned under the head of carpentry, and all other hardware necessary to complete the building in all its parts, is to be furnished of an approved quality. The knobs of the front and vestibule doors, and all the hinges, except those of the door opening to the cellar stairs, the knobs of the flush-bolts, and the sash-lifts, will be silver-plated; the other knobs for the first story, and all in the second, will be the best quality of white porcelain; the knobs for the basement and attic will be mineral.

IRON-WORK.

All the cellar and basement windows will have strong wrought-iron guards, properly anchored into the walls. The basement door will be lined inside with No. 18 sheet-iron. All necessary anchors, bolts, stubs, and jamb-screws, are to be furnished. The steps from the dining-room to the yard will require a neat iron railing on each side. The front door-bell will require a pull to correspond with the knob of the door, and four inside bells are necessary; also, a speaking-tube from the pantry to the kitchen; all to be properly arranged in working order.

MARBLE-WORK.

A mantel will be required in the library, the cost of which will be eighty dollars; one in the dining-room, to cost sixty dollars; two in the best chambers, at fifty dollars each; and two others, at forty dollars each; all of the best marble. The vestibule will be wainscotted to the height of twenty-seven inches, and floored with tiles of an approved pattern. The register-stones will be marble, of the requisite dimensions, cut out to receive the registers, and moulded to unite with the moulding of the wash-board. Two are required for the drawing-room, one for the hall, one for the library, one for the dining-room, and one for each of the four chambers on the second story.

RANGE.

A range will be required for the kitchen, with a water-back attached, all set in the best manner. Two "low-down" grates will also be furnished and set, one in the dining-room and one in the library.

GAS.

The pipe will be placed in the wall throughout the building, to supply the requisite number of burners, as follows: One chandelier of six burners, a side bracket of two, and a drop-light of four burners, in the drawing-room; one drop-light in the vestibule, one in the hall, one in the butler's pantry, one in the kitchen, and one of eight lights in the dining-room; two side-lights (single burners) in the kitchen, two in the laundry, two in the dressing-room, two in each of the chambers on the second story, and one in each of the attic rooms; one drop-light in the hall, second story; one burner in the furnace cellar, and one in the provision cellar; all prepared for connection with the meter and fixtures.

PLUMBING.

The water will be introduced to a hydrant in the yard; to a sink in the kitchen; to the water-back of the range, connected with a circulating copper boiler that will contain forty gallons of water; to the servants *chaise de commodité*, (which are entered from the area;) to two wash-basins in the second story chamber; to a sink in the kitchen pantry; and also to the butler's pantry, on the principal floor, beneath the main stairs; and to the dressing-room in the second story, as designated by the plans, in which is a *chaise de commodité*, wash-basin, and bath-tub. All the pipes to be extra strong, and of sufficient size for the proper supply and discharge. The bath-tub will be made of plank, paneled and moulded on the front, and lined with planished copper. The wash-basins will be fitted up in the best manner, with China bowls, and paneled and moulded front. The *chaise de commodité* will also be fitted up in the best manner, with hinged lid and paneled front, all put together with screws, and so arranged as to be easily taken apart. All the fitting of the dressing-room will be done with well-seasoned walnut plank. All the fixtures are to be of the best, silver-plated. The sinks in the pantries will be of medium size, and also lined with planished copper; that in the kitchen will be of soap-stone. Hot water will be conveyed to the sink, bath-tub, and basins. Provide, also, in the dressing-room, a shower-bath, of approved quality. The soil-pipe, and the waste-pipes from the sinks, etc., will be connected with a ten-inch pipe which leads to the street culvert; the rain-water pipe, also, will intersect it at the nearest point. All the iron pipe shall be well laid and caulked with lead at the proper time, while the work is in progress. All the plumber's work to be done in the best and most workmanlike manner.

FINALLY.—The contractor is to furnish, at his own cost and expense, all the workmanship and materials necessary to the erection and completion of the building, according to the true intent and spirit of the plans and specification; all the materials to be of good and suitable quality, and the workmanship throughout done in a good and workmanlike manner.

DESIGN VI.

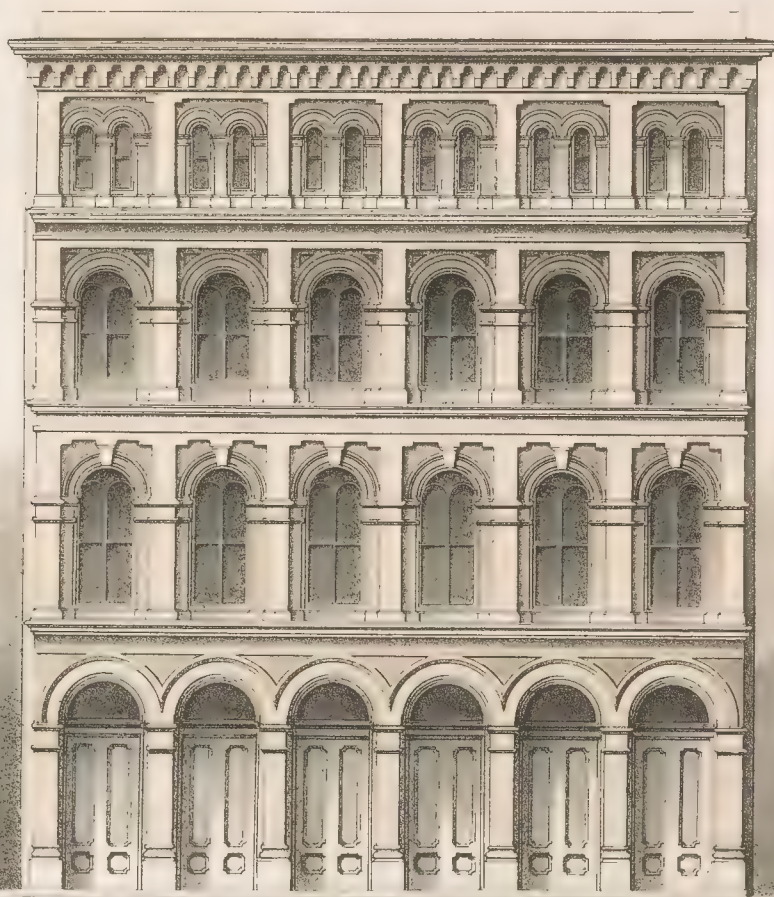
A BRICK STORE-FRONT.

HAVING given specimens of complete and also outline specifications, as they occur in the usual practice of the architect, we now propose to discontinue them, as the frequent repetition of particulars common to all classes of buildings must become tiresome. We shall hereafter devote our attention to such historical and general remarks as may be relevant to each particular subject under consideration. Before dismissing the subject of specifications entirely, however, we may observe that outline, or, as they may be more properly termed, skeleton specifications, are applicable where a general estimate is to be taken for a proposed building, by which the approximate

cost is obtained; but the complete specification is drawn with a view to ascertain the precise cost, and signed by the contractor, so as to bind him to a perfect fulfillment of his contract, and is therefore made carefully explicit.

In pursuance of the course above referred to, we offer some remarks on the ancient and modern use of the material of which DESIGN VI. is intended to be built. It is unaccompanied by ground plans, from the obvious reason that such a sameness is inevitable in the interior arrangements of certain classes of buildings, that nothing is gained by their frequent presentation; while with regard to a variety of design for the façades we labor under no such restraint. Hence, in the course of this work will be found several elevations without plans, and sometimes façades, differing in design, applicable to the same general plan.

The antiquity of bricks seems to be coeval with the first building after the deluge, the Tower and City of Babel being built of them, as also many of the early structures of Egypt. The Greeks used them; and the Romans, who began to build with them toward the decline of the Republic, carried the art to great perfection. They made their bricks of various sizes, according to the purposes for which they were required, but all of them were of much thinner proportions than the modern or Flemish brick, now in use. The clay of which they were made is generally found to have been very well tempered, and the bricks well pressed and thoroughly burned; sometimes they are deeply scratched on the surface for the apparent purpose of causing the mortar to adhere better to them than it would if perfectly smooth; an example of this is found at Dover Castle, England; but the moderns do not consider the practice necessary. At Lillebonne, in Normandy, some have lumps raised, and others notches cut in them, evidently for the same purpose. The Romans used bricks extensively in the buildings which they erected in England; but it seems that after their time the art was lost in that country, for most of the buildings not Roman, of higher antiquity than the thirteenth century, in which bricks are found, bear evidence of being composed of the wrecks of Roman work. The earliest building known to exist in England, built with bricks resembling the modern or Flemish brick, is Little Wenham Hall, in Suffolk, which is about the date of 1260; these are about nine and three-fourth inches long, four and three-fourth inches wide, and two and one-fourth inches thick, and of a lighter color than the ordinary red bricks. Since the time of Henry the Eighth, bricks have been a very common material for buildings, especially for houses, of which numerous fine specimens remain, more particularly in the parts of the kingdom which do not possess an abundance of suitable stone. In the construction of their walls the Romans usually employed bricks only in layers or bands, at intervals varying from one to four feet apart, for the purpose of binding their masonry more securely together; these bands sometimes consisted of single courses, but more commonly of two or three, and sometimes of as many as five. In English building, previous to the time of William the Third, brick-work was constructed with old English bond, the courses being laid alternately headers and stretchers; but in his reign this was partly superseded by the Flemish bond, in which the bricks in each course are laid alternately header and stretcher. These modes are variously practiced by the builders of the present date; but frequently fronts are built in which no headers appear, the

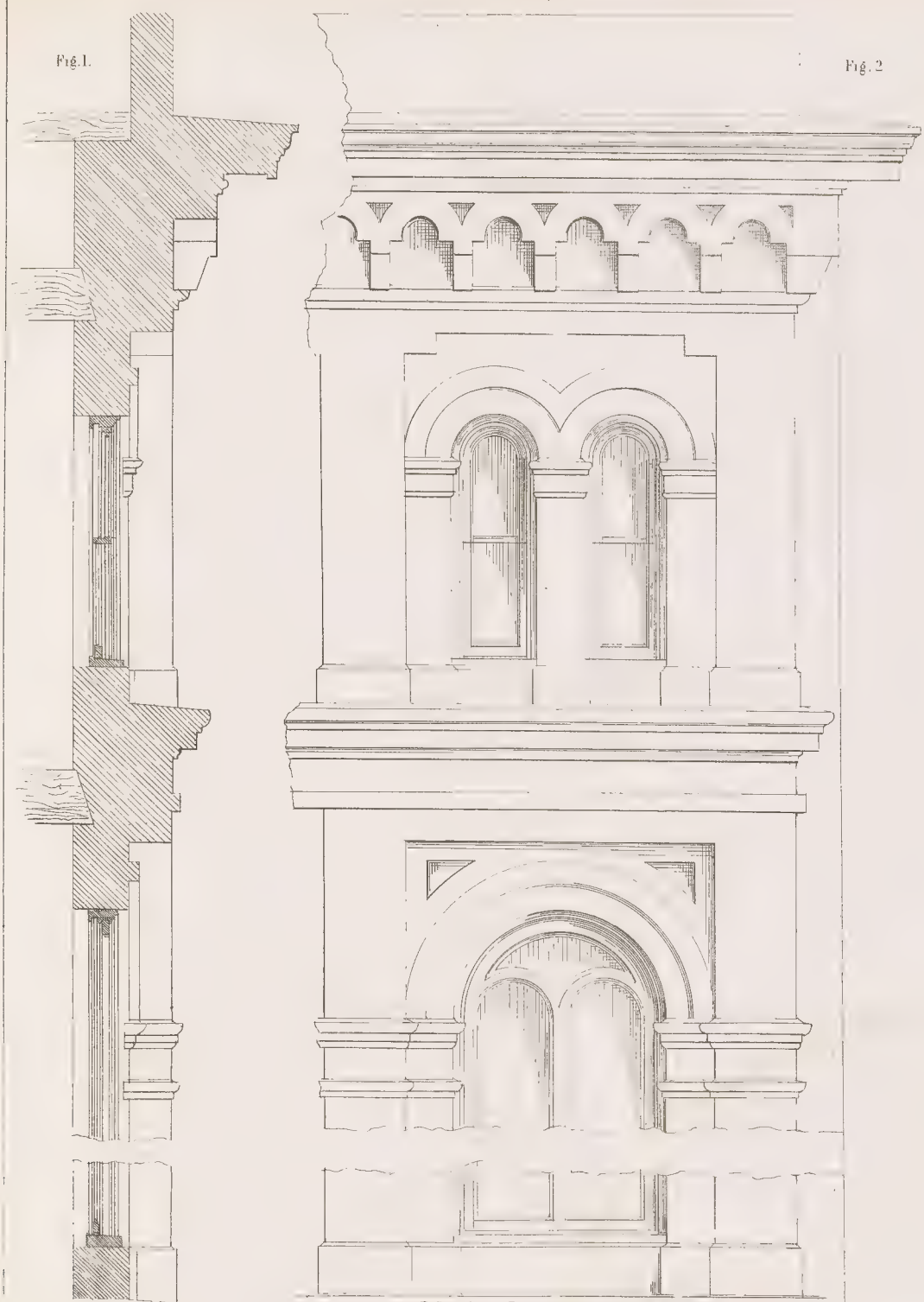


FRONT ELEVATION.

Scale 8 feet to one Inch.

Fig. 1.

Fig. 2.



DETAILS.

Scale 1/2 inch to the foot

Fig 1.

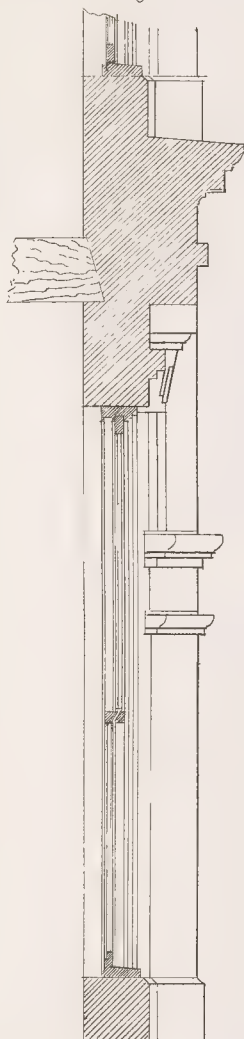


Fig 2.

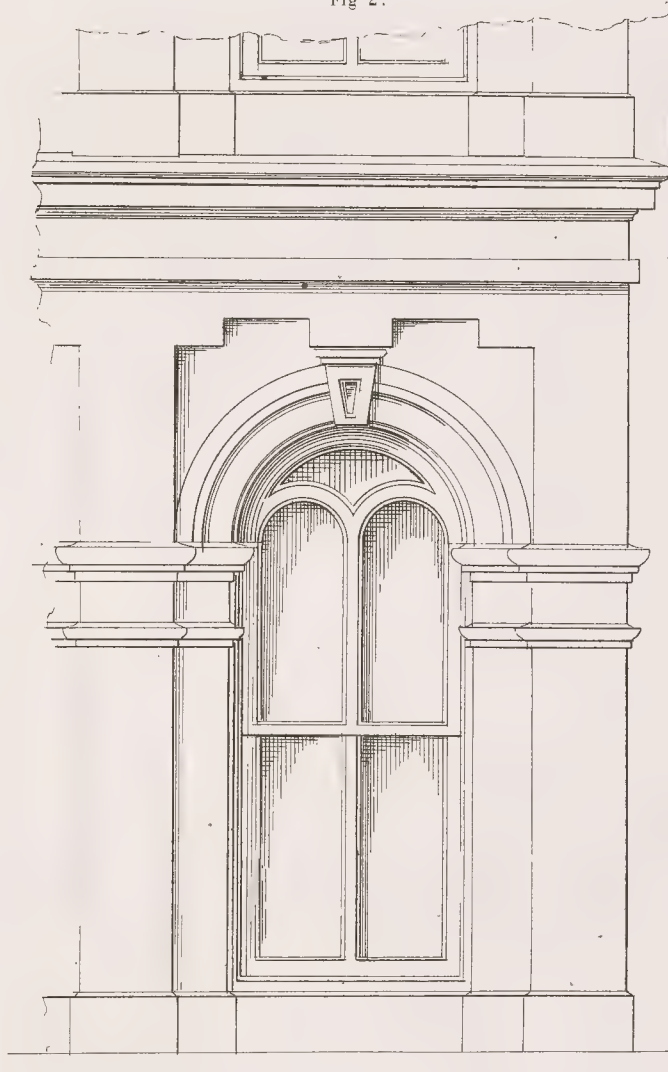
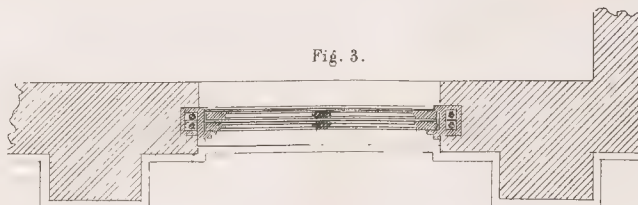


Fig. 3.



DETAILS.

Scale 1/4 inch to the foot.

Fig. 1.

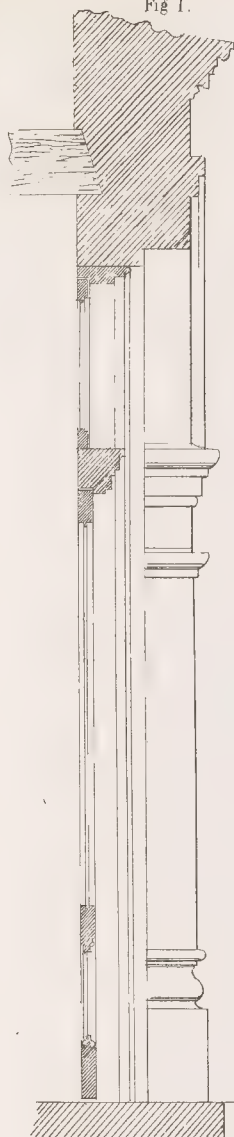


Fig. 2.

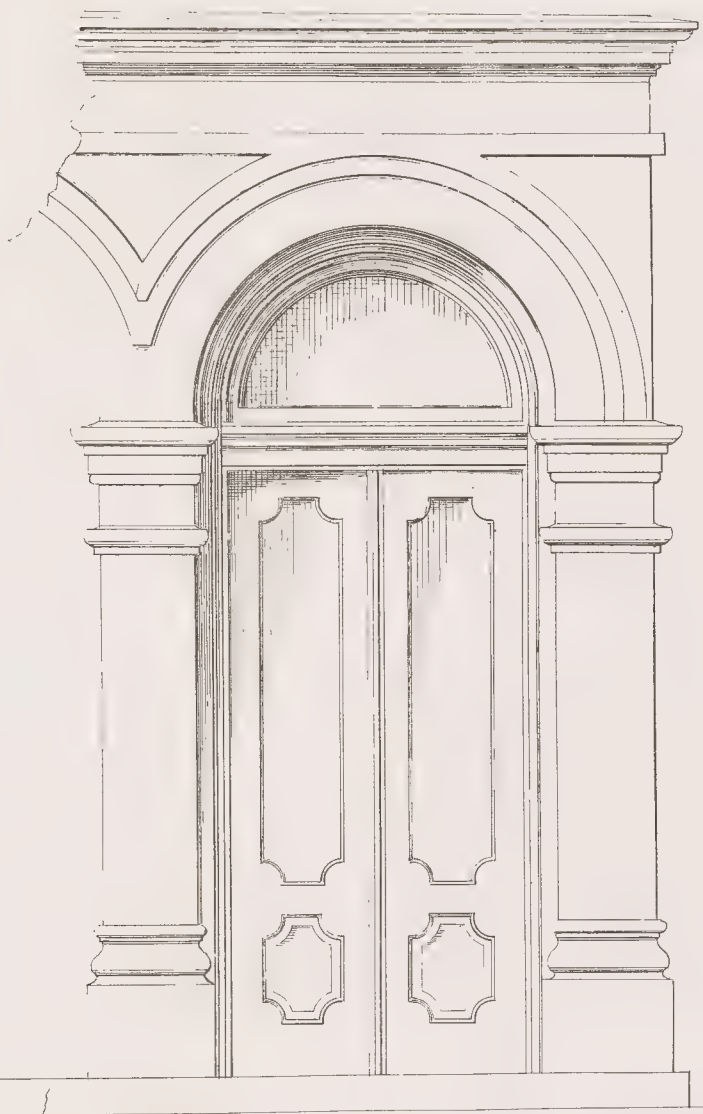
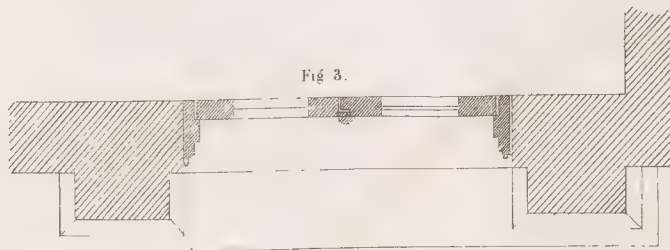


Fig. 3.



DETAILS.

Scale 1/2 inch to the foot

face-bricks being all laid lengthwise, and bonded transversely with pieces of strap-iron laid in the joints. For strength, however, this practice will not compare favorably with either Flemish or English bond; the latter is considered the strongest, although the former gives the most pleasing appearance.

Pressed bricks are to be preferred in all situations where a finished appearance is required, their superiority, in point of neatness, being apparent to the most casual observer. It is also reasonable to believe, from their greater compactness, that they are more durable than the common bricks. In the manufacture of this useful article our country possesses an acknowledged superiority over all others; yet there is great room for improvement in their application to building as regards architectural effect. Who does not grow weary of the monotony of a long, unbroken line of brick fronts, such as exist in most of our principal cities? To remedy, as far as possible, this striking defect in our architecture, is the duty of every American architect, and the simplest means of doing this will prove the most effectual in hastening the desired improvement.

DESIGN VI., PLATE 38, in which the façade is diversified by pilasters, is, in its general character, Italian, and is intended to represent the pleasing effect that may be derived from the employment of pressed bricks in the facing of the walls, in conjunction with dressings of white marble. This manner of building is practiced on the continent of Europe to a more considerable extent than we could wish in this country, the walls being variegated not only with marble, but also with bricks of different colors, and laid so as to exhibit a great variety of patterns on the surface. While we object seriously to the introduction of an extensive and irregular variegation as being vastly at variance with modern taste, we consider the use of marble cornices, imposts, and bases, as productive of a desirable appearance of variety.

Should it be deemed desirable to dispense with the white marble dressings, moulded bricks may be used, (except for the main cornice, which in any case may be wood,) which, as they are manufactured with great facility, will be found to lessen the expense. Another very satisfactory, but rather more expensive mode of finishing this design, would be to paint and sand the face of the wall to represent Pictou stone, and make the dressings of that material. This requires that the joints should be flush with the surface of the wall, the asperities of which should be removed by rubbing before the process of painting is begun.

PLATE 39 exhibits the details of the third and fourth stories. Fig. 1 is a section, and Fig. 2 the elevation.

Fig. 1, PLATE 40, is a section of the second story windows, and Fig. 2 an elevation of the same.

Fig. 1, PLATE 41, is a section of first story; Fig. 2 an elevation; and Fig. 3 a plan of the same.

DESIGN VII.

A COURT-HOUSE.

"The ancients must furnish the component parts; modern art is to select, modify, arrange, and combine."—ESSAY ON DESIGN.

BEAUTIFUL and complete in themselves, as we find the remains of antique edifices, it is only occasionally that circumstances will permit us to apply their forms and proportions in such a manner as to do justice to their original character. Even in public buildings the architect is rarely allowed to exhibit his taste by drawing on the approximate source of perfection—the ancient masters. To many buildings, however, may the column and entablature be appropriately applied, and among others, to the hall of justice are they particularly becoming.

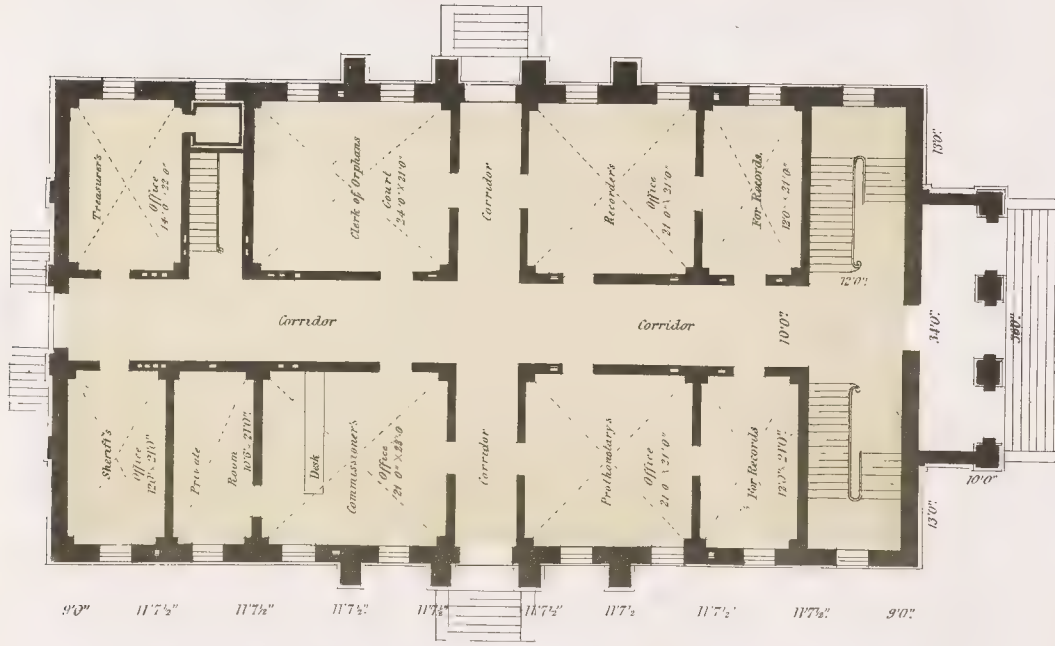
DESIGN VII. is for a court-house, to which we have given a portico of the Corinthian order, and, for the sake of variety, have embellished the flank with a projection, upon which the same order is developed in full relief. And here it is proper to observe, that this decoration of the flanks is necessary to give harmony to the perspective, when the view of the building is not obstructed by surrounding obstacles. As the splendor of a city in its public edifices consists in their architectural greatness, it is illiberal to contract them to dwarfish dimensions, or to crowd them in close situations where only the front can be seen, and where frequently a proper distance is wanting to view even this. Nothing is more productive of chagrin to the architect, than that his composition should be stowed away in some incommensurable street, where it can only present a sort of anamorphosis, or sadly distorted picture. In contrast with such a course, which has been too frequently pursued in the locating of public edifices, the City of St. Petersburg has ignored this rigid economy. There the public buildings are placed in a spacious square, or radiating panopticon site, formed by the junction of four or six streets converging toward it as a centre, and from all of which the building occupying it can be satisfactorily seen.

"If you desire," says an eminent author, "to see the proportion of a public statue placed on a pedestal, you would surely go so far distant as to take the whole of the figure in the eye at one *coup d'œil*, or glance of sight. Buildings require the same optical distance, and their respective mouldings to be optically inclined to the eye, and where the distance can be obtained, it should be at such an angle that the whole building may be seen without turning the eye in the head, first to look at one part and then at another." Many buildings now standing in crowded localities



FRONT ELEVATION.

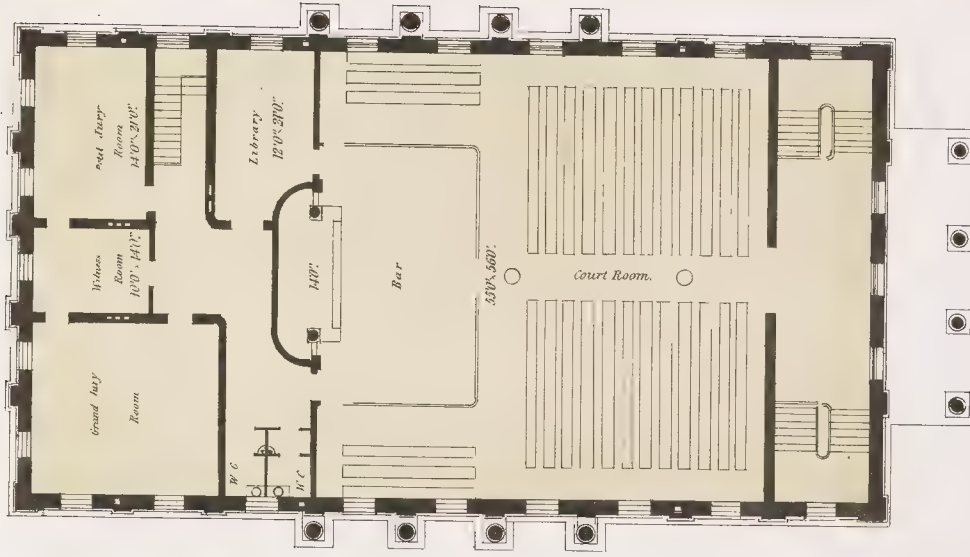
Scale 12 feet to one inch



BASEMENT PLAN.

3rd. State Ar. v.

Scale 1/16" = 1'0"



PRINCIPAL FLOOR.

Edif. of J. F. Watson cor. 4th & Walnut Sts. Phila.

would share an infinitely greater amount of our attention and admiration could they at once be removed and placed with reference to the above principles.

To give increased dignity to this design, and diversify its outline on the sky, we have added a crowning feature. For this we have chosen an octagonal tambour, embellished with eight pairs of columns, disposed opposite the angles of the tambour, above which a large bracket seems to act as a kind of flying buttress against the base of the dome, which is finally crowned with a lantern, having a balcony around its base. The height of the dome from the springing-line exceeds the radius, and the curve selected for its outline is elliptical. This kind of dome is called *surmounted*; and no argument is needed to prove the excellence of our choice of form, when it is known that the most celebrated domes in existence are of this character. The hemispherical, or surbased dome, conveys the idea of compactness and weight, rather than that of the buoyant strength apparent in the surmounted dome, which almost seems to force the lantern upward.

To make a design of this kind entirely satisfactory, it should be constructed with the best quality of materials throughout. The exterior walls should be of durable freestone, of cheerful color, which would better harmonize with the tone of the design than a dark or gloomy cast. The columns and enrichments should be of the same material; patchwork of any kind greatly impairs the dignity of an edifice that makes any pretensions to classic style, although, unfortunately for the lovers of true architecture, such things are sometimes permitted under the compulsion of present economy.

The use of the different apartments is so clearly illustrated by the plans, PLATE 43, that description is almost unnecessary, except to observe that the cellar and basement apartments are intended to be groined over, making the nether portion of the building entirely fire-proof. A part of the cellar must necessarily be occupied by a heating apparatus, for which purpose none can be more highly recommended than the hot-water furnace. A hint may be offered on the use to which the remainder of this portion of the edifice may well be applied, under certain circumstances. Premising that it is not desirable that the cellar of a court-house should be permanently occupied as a jail, in case the number of prisoners or the means of the town or district should not justify the erection of a separate prison, it may nevertheless be used as such.

We may assume that the number of prisoners will increase with the general growth and progress of the place, and therefore calculate that at no distant day a separate prison will be needed, when the cells beneath the court-house will conveniently serve for the temporary confinement of prisoners previous to trial.

Both basement and principal story should have a tessellated floor; for this the encaustic tile, as it suffers little from the effects of abrasion, is an excellent material. No difficulty arises in making this floor of the most perfect kind, as the groined arches give a firm substratum on which to make preparation for the tiling.

For the interior ornamentation of the court-room fresco painting may be very properly superinduced on whatever solid embellishments have been bestowed on the construction.

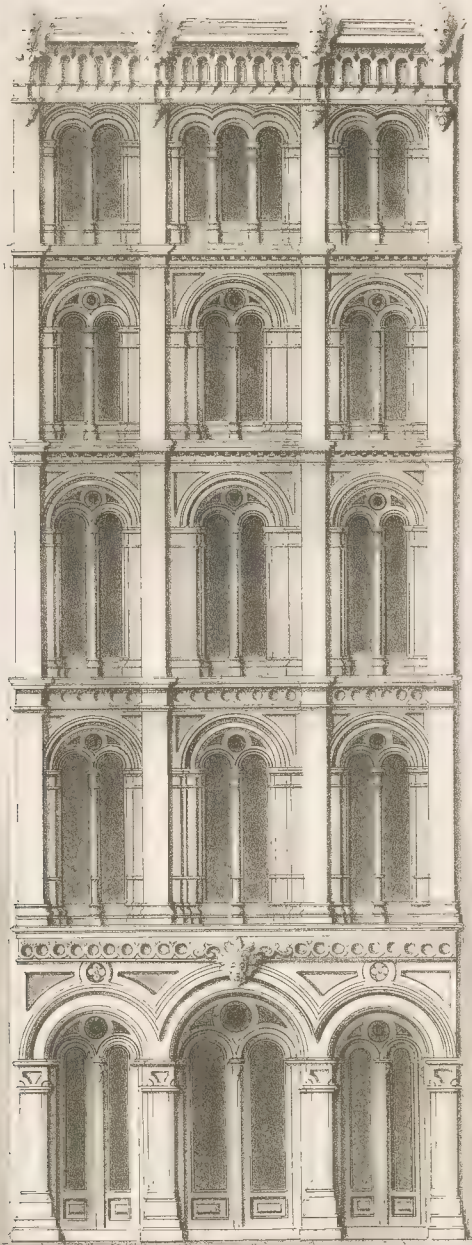
The plans here given, slightly modified, will apply to the FRONTISPIECE.

DESIGN VIII.

A GRANITE STORE-FRONT.

For mercantile purposes, when an extensive business is carried on, an establishment of great capacity is often required. Not unfrequently, in our large cities, buildings of this kind are elevated to the height of five and six stories; those of five stories are quite numerous. The obvious reason of this is the great importance of a choice location. The tendency of business to centre at a particular point or points, is observable in all cities in a greater or less degree. No one acquainted with the city of New York or Philadelphia, if asked as to the position of the business heart of the city, would hesitate a moment in giving a correct answer, the circumstance being so decided as to be an acknowledged feature; and the same can be said of other great cities with equal truth and propriety, with this modification, that some have numerous centres of equal note. This importance of a location as near as possible to the city mart, has, in proportion to the increase of trade in the place, greatly enhanced the value of adjacent property, and, as a consequence, has tended to contract the width of front that would otherwise be desirable, it being considered better economy to extend the length of the building, and make additional amends for what it obviously lacks in transverse dimensions, by an augmentation of height; as it has been facetiously remarked, "upper floors incur no additional ground-rent." This is well enough as a matter of utility, and we are compelled to receive it, and apply such means as are in our power to reconcile the extreme altitude of the structure thus created with its lack of width, and, as it were, force it to make an architectural appearance, despite its unhappy proportions.

DESIGN VIII. is composed with a view of being executed in granite; a stone particularly adapted to a composition of large parts, but yet quite appropriate for the heavier kind of ornamentation. Its name has particular reference to its structure, which is granular, the parts or grains being mingled without order or regularity. It exists in the old and new world, of various qualities and colors. But its use for architectural purposes is perhaps nowhere more considerable than in the Russian capital, St. Petersburg, where palaces and dwelling-houses alike display their granite fronts. Bridges, and high walls lining the banks of the great Neva, and some of the principal canals, exhibit the profusion with which the material abounds in that region. The largest mass of granite known to have been transported in modern times, is the rock which serves as a pedestal for the equestrian statue of Peter the Great. This is of the red-granite of Ingria, and was originally thirty-two feet long, twenty-one feet thick, and seventeen



FRONT ELEVATION

Scale of feet to one inch

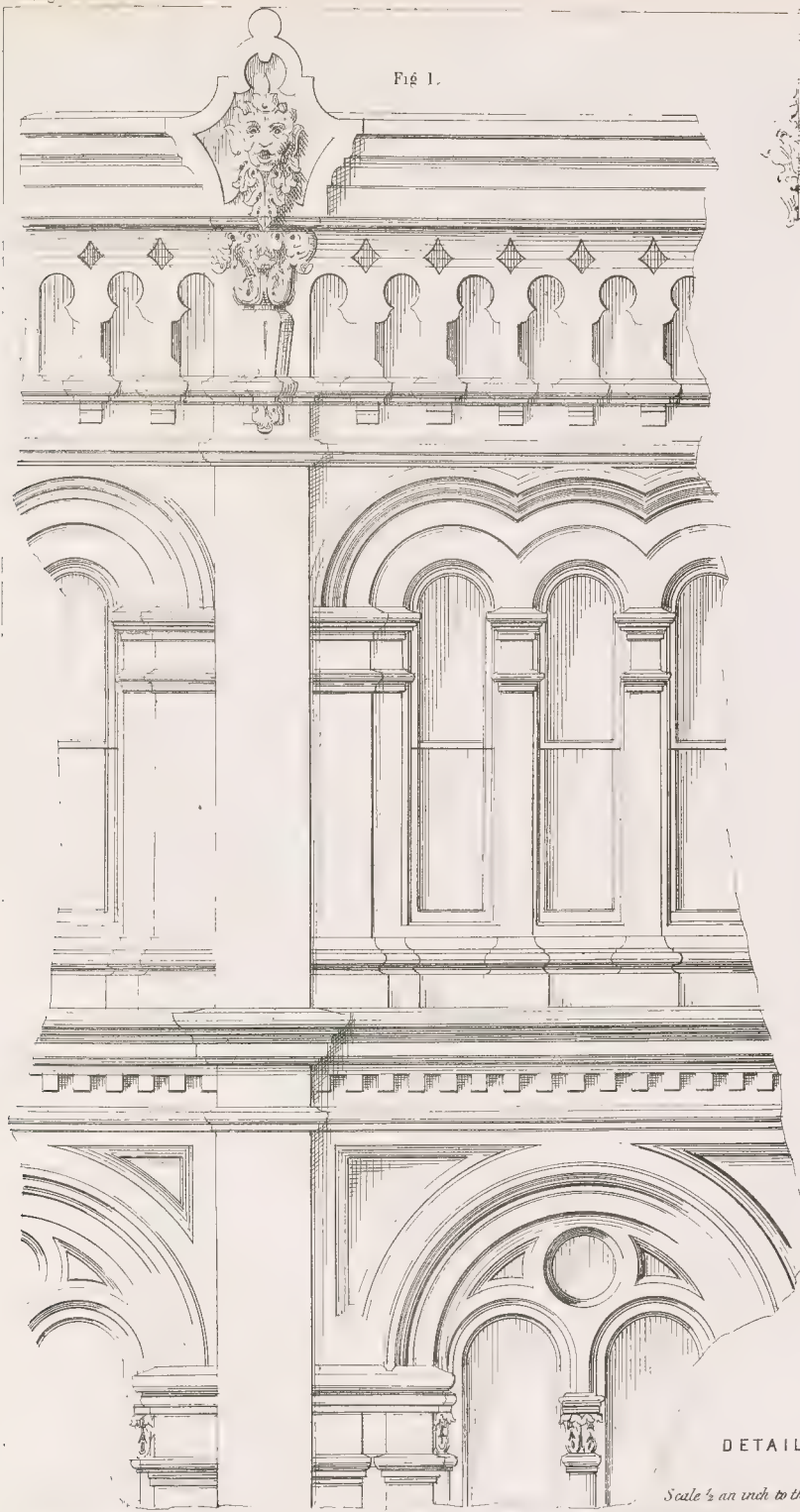


Fig. 1.

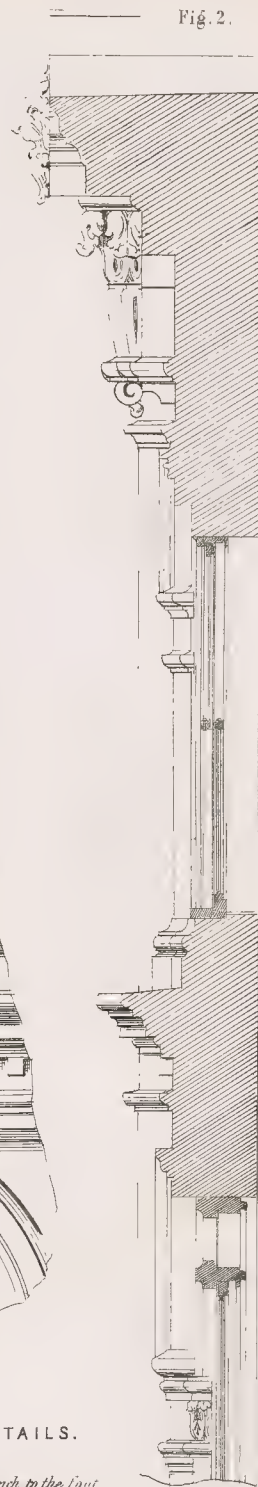


Fig. 2.

DETAILS.

Scale $\frac{1}{2}$ an inch to the foot



Fig. 1.

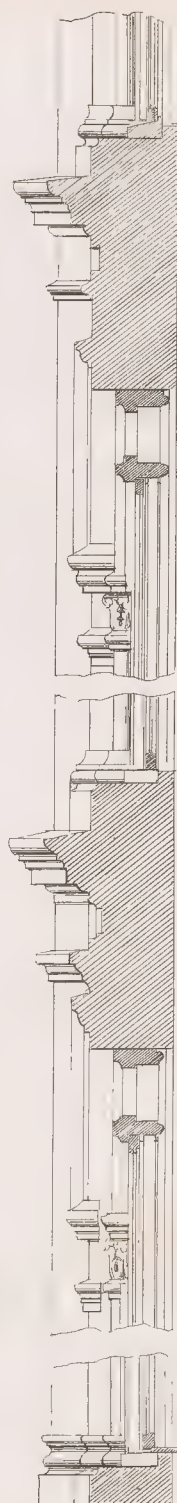
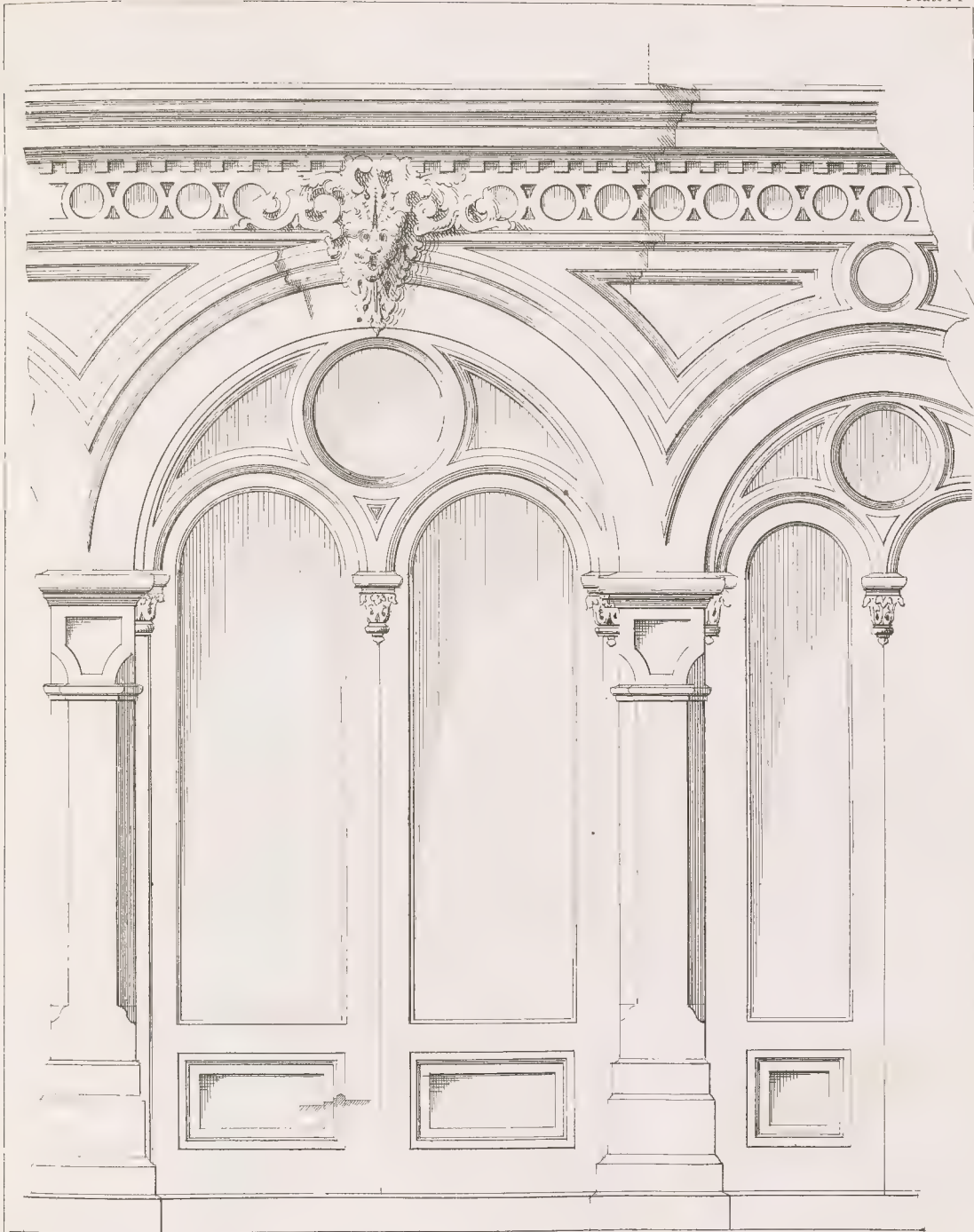


Fig. 2.

DETAILS.

Scale half an inch to the foot

J. F. Watson Lith. Phila.



DETAILS.

Scale half an inch to the foot

feet wide; but it has been much reduced in size, in order to give it the form and picturesque appearance of a natural rock. It was disengaged from a swamp, and removed a distance of forty versts, or nearly twenty-seven miles, to St. Petersburg, its weight being calculated to exceed three millions of pounds. Cannon-balls of iron were at first used as rollers, for its transportation, but were found to crush beneath the ponderous mass, which occasioned balls of bronze to be substituted.

Among antique edifices, a specimen of this material is found in one of the noblest of ancient colonnades, that of the Portico of Agrippa, in the Roman Pantheon.

In the United States, the use of granite is becoming common. Many large mercantile and other edifices in the principal cities are constructed with it; and no argument can be opposed to the use of a stone so durable, and, in its general aspect, so pleasing. True, its peculiar formation and texture does not admit of fine cuttings, or delicately rounded ornament, without involving great expense, yet this does not necessarily prevent its application to that bold class of structures for mercantile uses, of which DESIGN VIII. is an example. On the main cornice of this design, and on the keystone of the principal arched entrance, we have an ornament of the class called *grotesque*. This style of ornament was used by the ancient Romans in the decoration of their palaces, baths, and villas; it is also to be found in their temples and tombs, some of which, being vaulted and covered up with ruins, have been cleared by the modern Italians, from whom this ornament received the name of *grotte*, from whence the modern English word *grotesque*. Its origin is perceptible in the hieroglyphics of the ancient Egyptians, where the heads and limbs of men and animals are joined to blocks of stone, foliage, and various artificial forms, these compounds being symbolical of the character of the deity or person whose history they record, or whose deeds they are intended to transmit to the future. The Greeks, with consummate skill, improved on the rude semi-barbarous grotesques of the Egyptians, and, in the execution of some of those strange combinations, exhibited their general knowledge of nature, reconciling, by artificial lines and connections, forms that in nature are in every respect distant and diverse from each other, so as to produce a harmonious effect. With exquisite taste they formed chimerical beings, such as the dragon, the sphinx, and the griffin, under whose compound forms were couched the mythological enigmas of those heathen times. Of this character is the ornament so common on Egyptian structures, the winged serpent surrounding an egg. Since these mysterious emblems of polytheism are devoid of significance to us, and cannot therefore be regarded with veneration, we may use such as are pleasing in form and do not insult the understanding by the grossness of their combination. At the height of the main cornice of this building, no nicety of carving is required to give the proper effect; a few bold strokes, with well-chosen outlines, will fulfill the intention of ornament placed at so great an altitude.

PLATE 45. Fig. 1, details of cornice and upper windows; Fig. 2, section of the same.

PLATE 46. Fig. 1, second and third story windows; Fig. 2, section of the same.

PLATE 47. Details of front entrance; these are all drawn on such a scale as will enable the builder to measure their respective parts.

DESIGN IX.

A BUILDING IN THE FLORENTINE-ITALIAN STYLE.

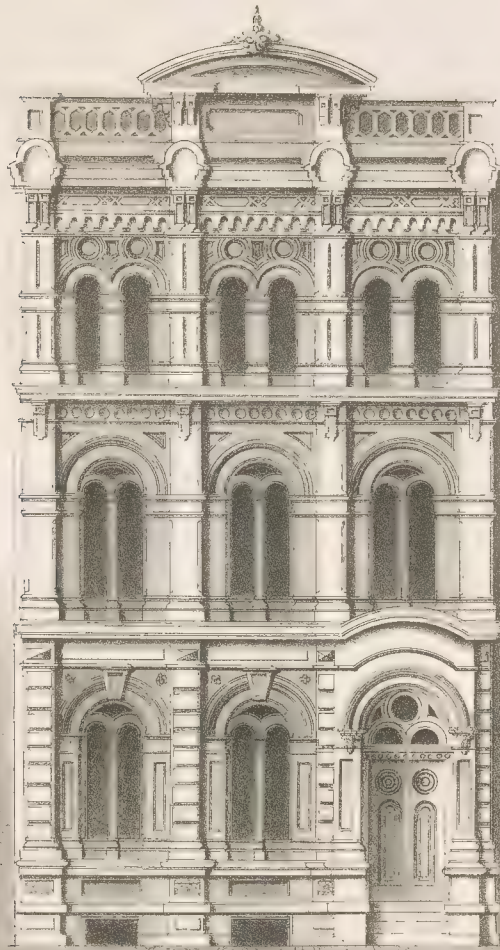
FLORENCE, the Athens of Italy, and one of the centres of Italian refinement, is celebrated as the second birth-place, as it were, of Roman Architecture. Here, in the thirteenth century, flourished Brunelleschi, to whom we have already referred, as a reviver of long-neglected ancient art. It is seated in a valley; and the traveler approaching it beholds one of the most beautiful cities in the world, with its domes, towers, and spires rising from a foliage of luxuriant growth such as an Italian climate only can produce. "The Arno, famed in song and story, runs rapidly and cheerfully through the vale, and, entering the city, divides it into two nearly equal parts, which are connected by four bridges of classical designs. As the eye ranges over the prospect, and looks with, or against the current of the river, the view is equally adorned with numberless villas, luxuriant shrubberies, and vineyards, which continue in uninterrupted possession of this golden vale from the river back to the foot of the bold Apennines, that close the panorama."

Authors agree in dividing Italian Architecture into three kinds, having a decided similarity in general character, yet each exhibiting peculiarities sufficient to distinguish it from the others. These are named Florentine, Roman, and Venetian, from the cities in which they were predominant, Florence, Rome, and Venice.

The architecture of Florence, and more particularly of its palaces, is of a singular character—strong, massive, gloomy, and rather fortress-like—a character that accords with its history, which declares that dissensions and civil discord made private fortifications necessary.

"The buildings of Florence," says a French writer, "appear to be not the work of ordinary men; we enter them with respect, expecting to find them inhabited by beings of a nature superior to ours. Whether the eye is arrested by monuments of the age of Cosmo de Medici, or of the times which preceded or followed it, all in this imposing city carries the imprint of grandeur and majesty. Frequent revolutions obliged the chiefs of parties to consider their personal safety along with the magnificence of their dwellings. Externally, they are examples of the skillful union of grace with simplicity and massiveness; internally, models of exquisite taste. After Rome, Florence is the most interesting city to every artist."

The features by which we recognize DESIGN IX. as the Florentine-Italian, are the massiveness of the pilasters and the rustication of the principal story with plain and vermiculated masonry. These are acknowledged characteristics of this style; but the requirements of the structure to which,



OFFICES

in this case, they are applied, will not permit us to follow rigidly the massiveness of the examples furnished by Florentine Architecture.

DESIGN IX. is intended for the front elevation of a building of fire-proof construction, in many respects similar to the one illustrated by the plans and section given under DESIGN III., except that it has but one front entrance. It may nevertheless be occupied by more than one business firm, as the facilities afforded by the hall and general interior arrangements are such as to admit of separate communication with the front and rear rooms and private conveniences.

For the manner of constructing a building of this kind, reference may be had to the minute specification given under DESIGN III. The use of wrought-iron beams, though expensive at the outset, promises an exemption from accidents by fire, which nothing else except the old mode of erecting an extensive and costly amount of arch-masonry can give; a mode of constructing floors and ceilings that for ordinary business structures, such as banking-houses and insurance-offices, is so far from being economical as to be impracticable. According to the liberal ideas of the present day, a bank or an insurance company would be out of place in a narrow vaulted room, in the construction of which space and material had been sacrificed to the consideration that the edifice must be incombustible. To avoid this waste of both, and at the same time to employ no combustible material, has the iron beam and segmental arch been used. Hence, the rooms preserve their parallelogramic form, which is always desirable where much business is transacted; and their contents are insured against the torch of the incendiary, or the unlucky blunders of the negligent.

As great care is required in the construction of this kind of building, some hints on the subject may now be offered. The formula having been already given in the specification above referred to, and on the longitudinal section, PLATE 13, the following may be considered as explanatory of the same. In order to make the building capable of resisting the inroads of combustion, when other buildings are being consumed in the neighborhood, as well as to give firm support to the heavy material of which the floors are composed, it is necessary that the walls should be very thick, and carefully bonded, so that a falling mass of considerable weight cannot affect it. And as no part is more liable to take fire readily from the outside than the roof, especial vigilance is required that nothing inflammable may be permitted in the construction of its exterior surface. In the example above referred to, the roof is composed entirely of iron, which precludes all possibility of combustion in that quarter. The soffits for the inside shutters of the windows (which are iron) are formed in the stone, so that the trifling amount of wood contained is prevented from communicating fire to any other material of its own combustible nature. Nor is wood necessarily used in the building of the stairs, or laying of the floors; the steps of the former are of corrugated iron, with open risers; the latter, entirely of encaustic tiles, bedded on concrete.

DESIGNS X. AND XI.

CITY RESIDENCES.

WHAT we propose in DESIGNS X. and XI., is to show that by simple means a dwelling within the reach of the citizen in moderate circumstances, and adapted to the narrow space usually allotted to the purpose in a close-built city, may be divested of the meagerness presented by naked walls and unbroken surfaces. In DESIGN X. this is done by rustivating the first story of the façade, and by the arrangement and finish of the windows and cornices.

On DESIGN XI. a greater amount of decorative effort is expended, as is evidenced by the pilastered basement, with intervening channel-work, the rustic quoins on the corners, and also in the arched window-heads and dressings.

On PLATES 50 and 51 will be found the plans to which the above-named designs belong. On the first floor, which in this instance we designate the basement, and which is elevated four steps above the pavement line, we have given a hall nine feet six inches wide; this admits of an exterior architectural arrangement of the front door, which cannot be obtained with a narrow hall, while a more commodious footing is afforded for the main stairway. The remaining width of the building is given to a library, which extends back to the depth of eighteen feet. A pantry, of convenient size, intervenes between this and the dining-room; an apartment of pleasing proportions, the entrance to which is made at the angle nearest the foot of the stairs, and the other angles, being formed to correspond, are occupied by closets. Rear of the main stairs is a private flight, leading to the second or principal floor, and beneath which a flight leads to the kitchen. This kitchen is provided with suitable cooking apparatus, a sink, and a dumb-waiter, to communicate with the pantry adjoining the dining-room above. The front part of the cellar is occupied by apartments for coal, heating apparatus, etc. Rear of the kitchen is a walled area, excavated to the depth of a step below the kitchen floor, and well paved with brick or flag, with a flight of stone steps ascending to the yard. We have shown a veranda, on a level with the entrance floor, extending over one-half of this area, it being necessary to leave the other half open for the better admission of light to the kitchen.

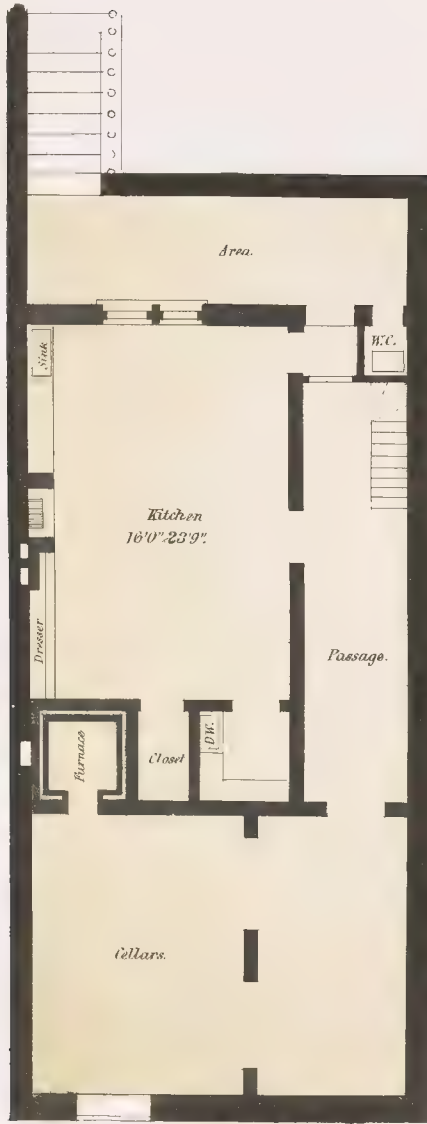
Proceeding to the second, here called the principal floor, we find a parlor over the dining-room, in two of the angles of which are niches for statuary. On front is a commodious drawing-room; and here is the peculiar merit of this plan—by placing the drawing-room on the second floor, the whole width of the building can be given to its dimensions, while if placed on the



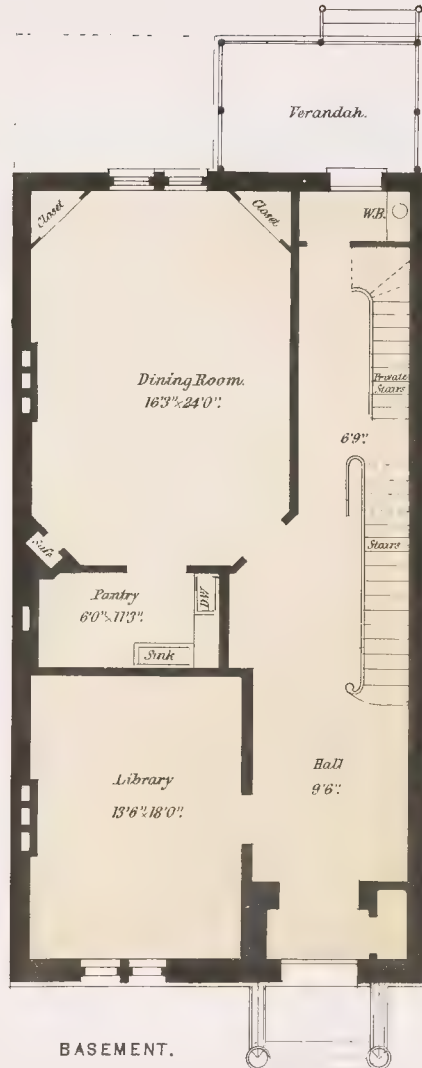
FRONT ELEVATION

Scale 8 feet to one inch

J. W. B. & Co. Ld. Eng.



CELLAR PLAN.



BASEMENT.

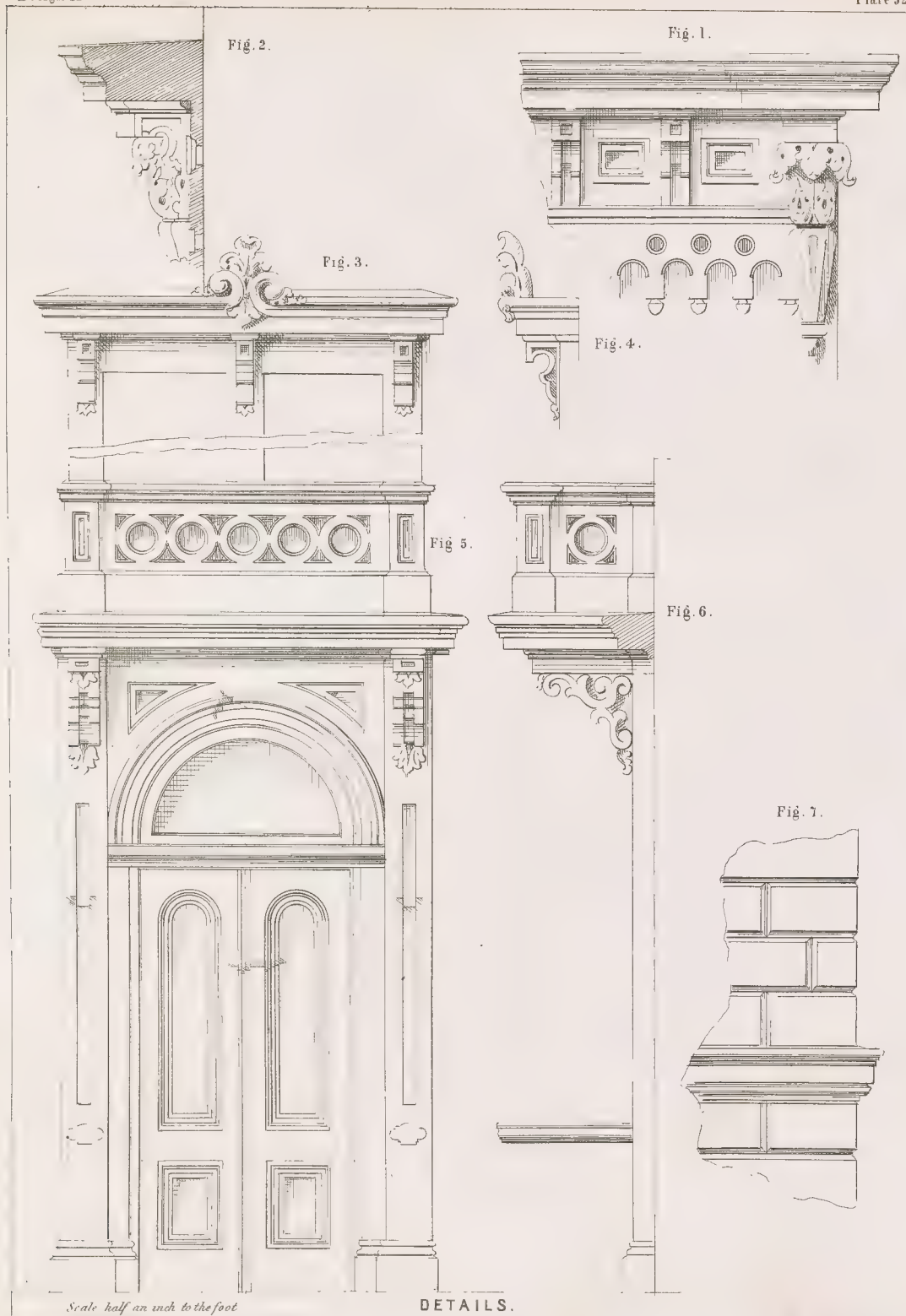
Scale 8 feet to one inch.

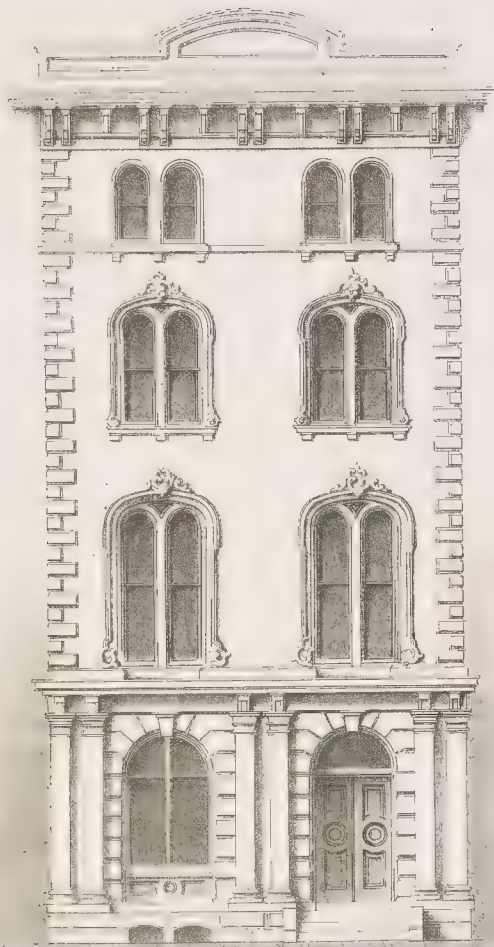


Scale 8 ft. to One Inch

PRINCIPAL FLOOR

THIRD FLOOR





FRONT ELEVATION.

Scale 8 feet to one inch

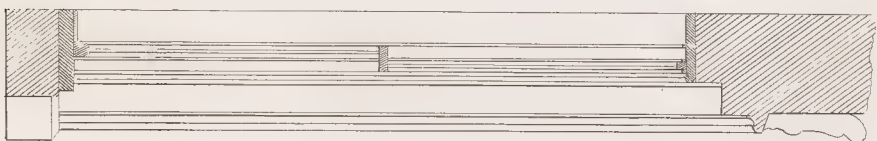


Fig. 2.

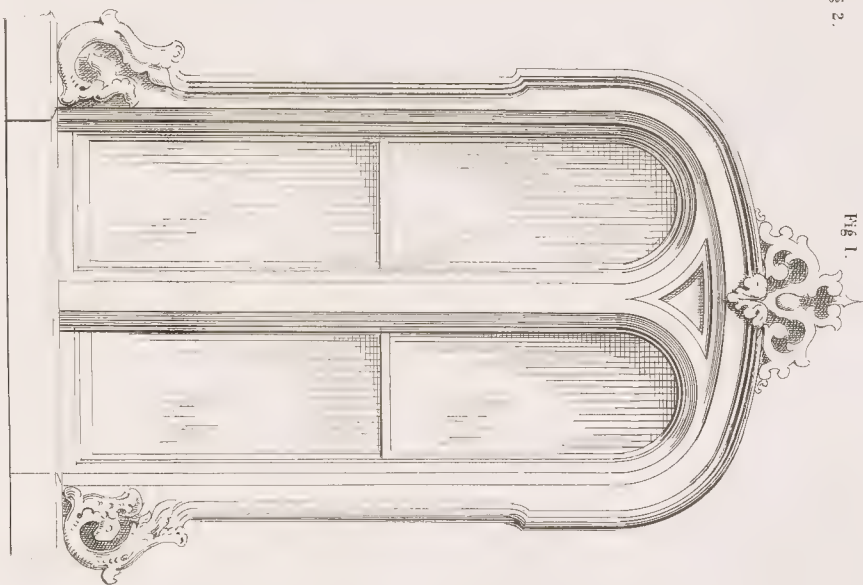


Fig. 1.

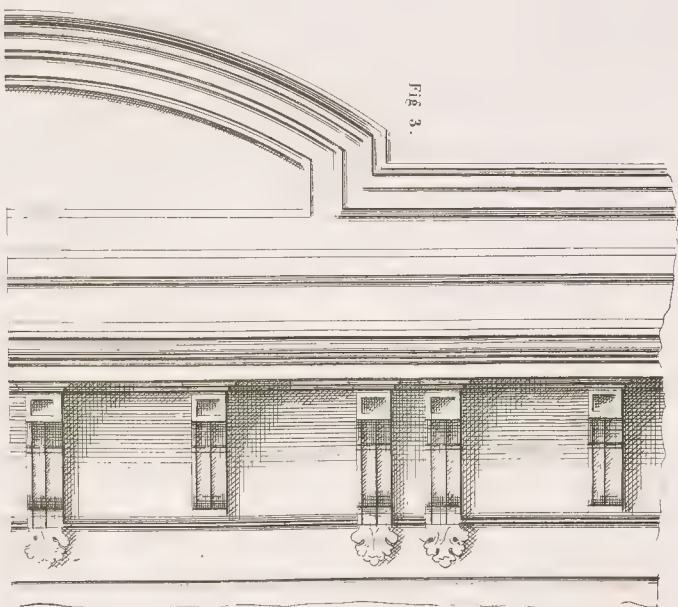


Fig. 3.

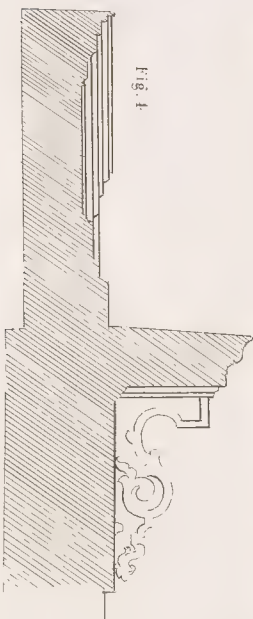


Fig. 4.

DETAILS.

Scale half an inch to the foot.

See also Arch.

Fig. 2.

Fig. 1.



DETAILS.

Scale half an inch to the foot

entrance story it suffers a diminution equal to whatever width may be given to the hall. After widening the hall, as we have done in this case, beyond the usual dimensions, sufficient width remains for a library of ordinary size, to which purpose we have accordingly applied it. The divisions of the third floor are clearly illustrated by the plan, showing the chambers, the bath, etc. The fourth floor is similarly divided.

In the erection of modern structures a great deal of attention has been justly paid to their proper warming and ventilation, and manifold expedients have been resorted to for the perfection of both. In no class of buildings is it more desirable that both should be perfect than in the dwelling. Admitting their importance in public buildings, when we consider that we eat, drink, and sleep in our dwellings; that age and infancy are alike exposed, and equally liable to suffer under the influence of a vitiated atmosphere, we must admit their proper warming and ventilation to be a matter of primary importance.

The days of capacious fire-places and blazing hearths seem to have about departed. More convenient and economical modes have been successfully sought. Heating by furnaces in the cellar has become quite common, and in view of its many advantages it seems probable that a few more years will make it almost universal in city residences. The plans we have just described are arranged for the heating to be done by a furnace. A flue warming each room by a register near the floor, ventilates it by one placed near the ceiling.

On PLATE 52 will be found the details for DESIGN X. Fig. 1, cornice; Fig. 2, section of same; Fig. 3, window-head; Fig. 4, profile of do.; Fig. 5, elevation of front door and balcony; Fig. 6, profile of do.; Fig. 7, rusticated base.

PLATE 54, details for DESIGN XI. Fig. 1, elevation of second story window; Fig. 2, section of the same; Fig. 3, main cornice; Fig. 4, section of do.

PLATE 55, elevation and section of front doorway.



DESIGN XII.

A MERCANTILE BUILDING IN THE NORMAN STYLE.

THE Norman style, as its name implies, flourished primarily in Normandy, and was introduced in other places cotemporarily with Norman power and influence. The Saxon and Norman are nearly allied, the principal difference being that the former was the work of semi-barbarous hands, and the latter the production of a people who had made greater advances in the art of building. They are alike traceable to the same grand source and type—the Roman. The Norman was

developed on the continent at least a century before its introduction into England; it is generally styled the architecture of the twelfth century, and dates from 1066 to 1170, or, if the additional period of the Transition or Semi-Norman be considered, to 1200. A distinctive feature of the Norman style is its massiveness, in which it accords with the Saxon, but the former gives in all cases greater evidence of a higher state of refinement among its builders by a superior display of enrichments. The arches in the early Norman are nearly all of semicircular form, occasionally stilted, having a single plain soffit; but we find them progressing by gradations from one to two and three concentric arches, the walls being of great thickness; and finally, the recessions thus formed are decorated with a profusion of the zigzag or chevron mouldings, always characteristic of this style; and frequently a kind of grotesque was used, called the bird's-head moulding.

"Buttresses can scarcely be said to exist in buildings of this style, the thickness and solidity of the wall not requiring such supports; somewhat similar, however, in appearance are those projections which are termed by Mr. Whewell *pilaster-strips*. They are precisely of the same character as the projection in Lombardic buildings, and resemble a broad, flat pilaster, standing out but slightly from the general surface of the wall, and terminating under the cornice or parapet, sometimes with a slope, but frequently carried up square to the soffit of the parapet, the face of the buttress being flush with the corbel table."

Even after the introduction of the pointed arch, the Norman method was made subservient to its embellishment, and, for a time, the form of the arch itself was the only mark of distinction. This is called the Transition period, and from this sprung the Gothic, with its ever devious and countless ramifications.

Owing to the rude, unsettled state of the government, after the conquest of England by the Normans, castles were built for the purposes of protection from a general enemy, and for the defence of the barons against each other in the petty feuds of the times. Their prelates were architects, and the description of a citadel, as built by Gundulph, Bishop of Rochester, who flourished about the beginning of the twelfth century, may not be uninteresting:—

"His central towers are so lofty as to contain four stories, as was also the case with most other keep-towers. The basement was the dungeon, without light; the portal, or grand entrance, was raised many feet above the ground; but his great merit consisted in various architectural contrivances, by which as much security, during a siege, was given to his keeps by stratagem as by real strength. The walls were not unfrequently from twelve to twenty feet thick at the base. In the souterrain of vaulted stone the military engines and stores were deposited. In the thickness of the walls were placed winding staircases, the well for water, the vast oven, inclosed galleries and chimneys, with an aperture open to the sky and communicating with the dungeon, in which prisoners were confined, and to whom it gave all the light and air they could receive. There was also a kind of flue, not more than eight inches in diameter, for conveying sound to every part. The state apartment occupied the whole third story, and the staircases leading to it were much more commodious than the others, and even so large as to admit of military engines. Adjoining to the great chamber was the oriel, lighted by a window embowed withinside. In

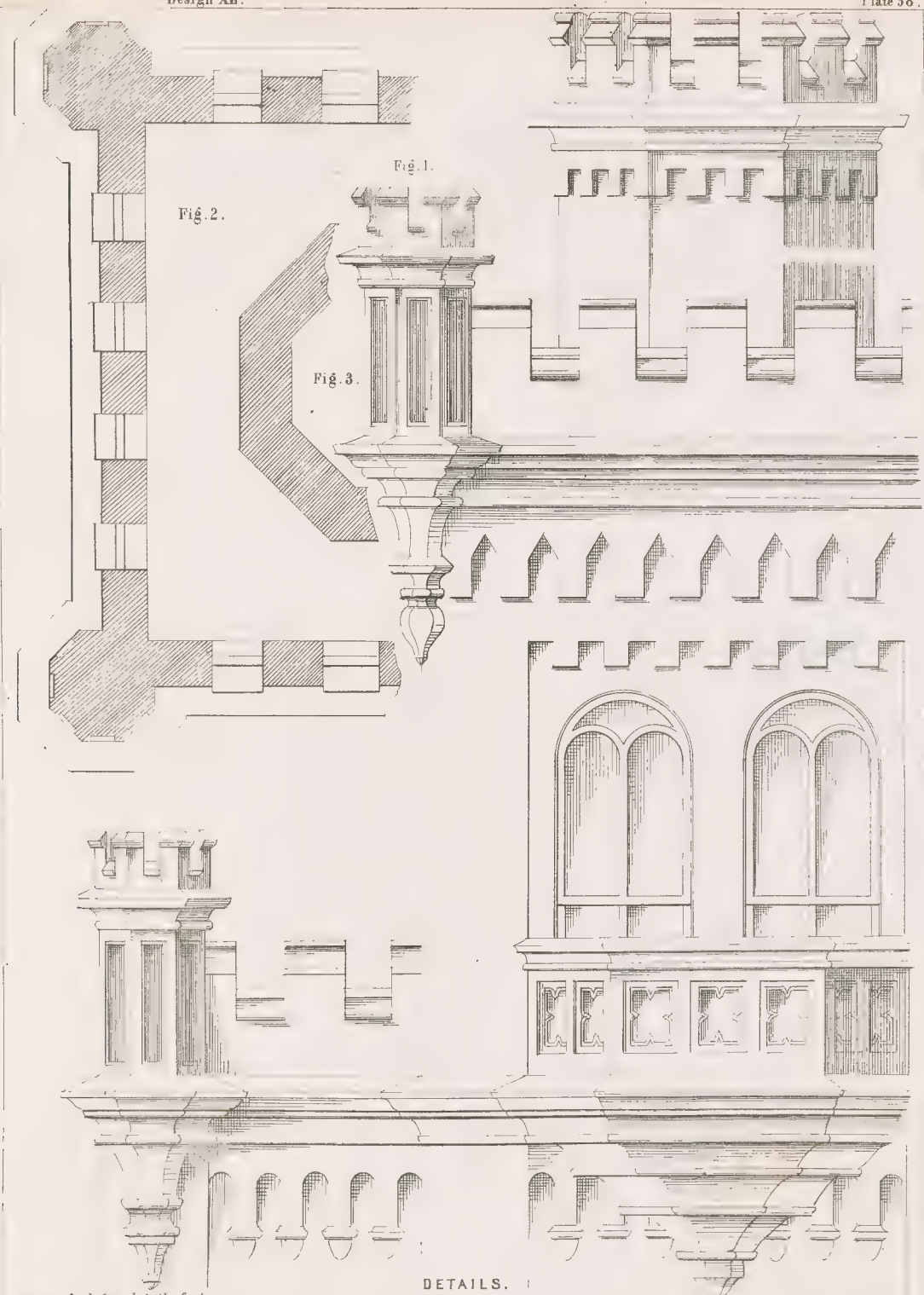


FRONT ELEVATION.



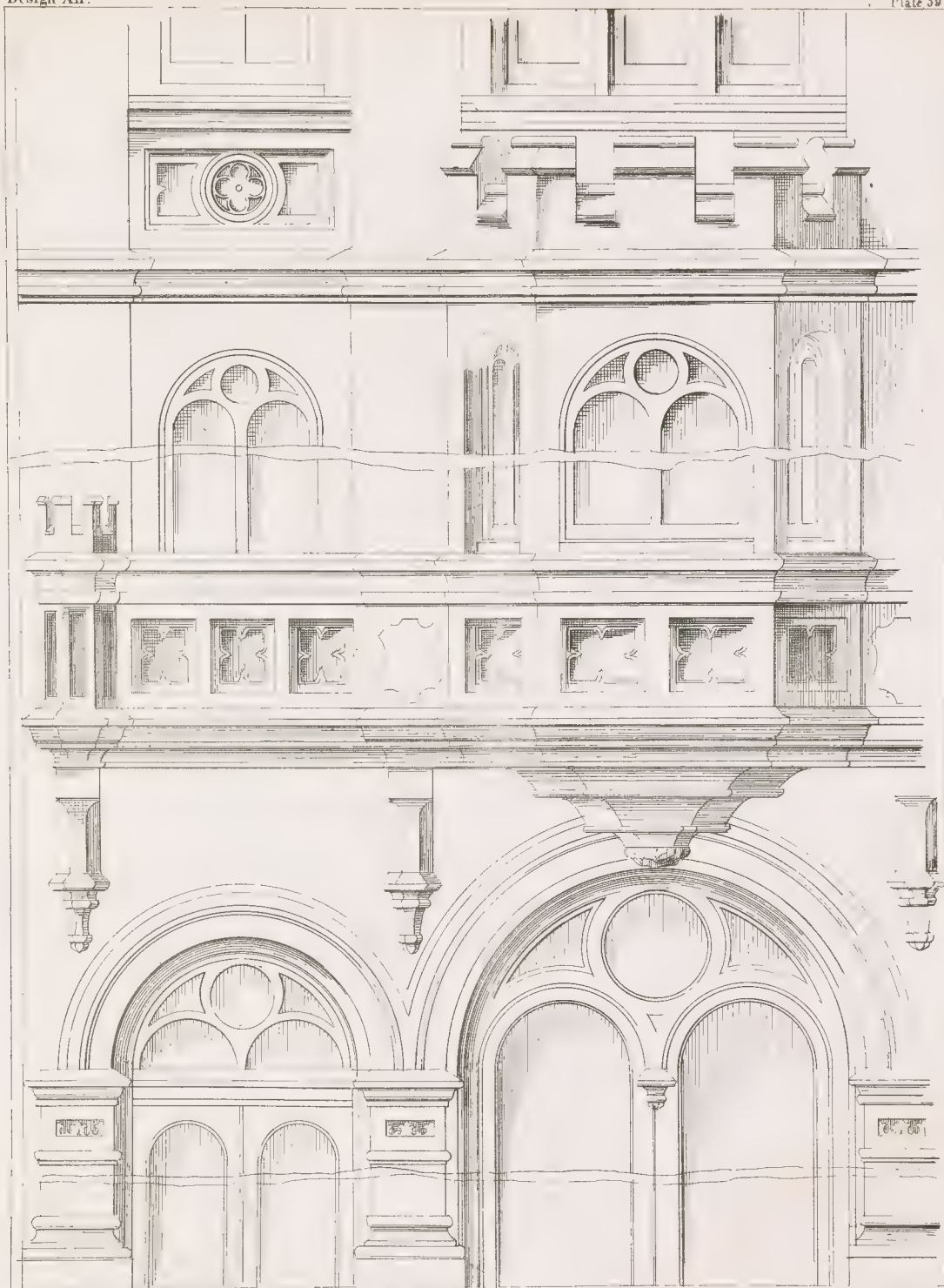
DETAILS.

Scale $\frac{1}{4}$ inch to the foot



Scale 1/2 inch to the foot

DETAILS.

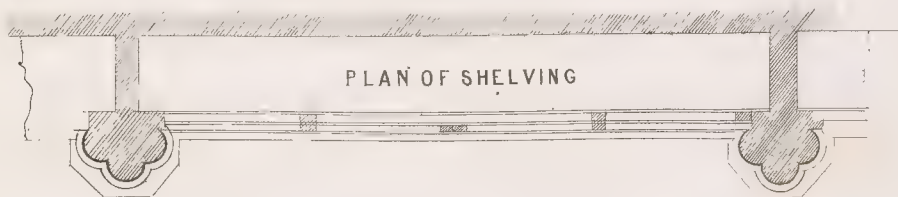


Scale 1/2 inch to the foot

DETAILS.



ELEVATION OF ONE SECTION OF CASES

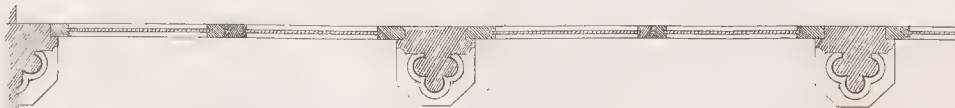


PLAN OF SHELVING

Scale $\frac{1}{2}$ inch to the foot



DOORS OF ENTRANCE FROM VESTIBULE TO STORE



PLAN

Scale 1/2 inch to the foot

Plate 62.



Rochester Castle the chief room was thirty-two feet high, including the whole space within the walls. The walls of the ground story had no light, the second only loop-holes, but the third had large arched windows, placed so high as not to be looked through, and so defended by an internal arcade that no missile weapon could enter or fall with effect. Each floor had its communication with the well. The chimneys were very capacious, projected considerably into the rooms, and rested upon small pillars; and the sinks were so contrived in an oblique direction, that no weapon could be sent up them."

The device of battlements is of great antiquity, for they are found of various forms in the bas-reliefs of Nineveh and Lycia, and in many remaining walls and towers of the Greeks and Romans, besides those of the middle ages. Their original purpose was the crowning of fortifications, but they were also largely bestowed, by way of ornament, on the civil and ecclesiastical buildings of the mediæval period. The rising parts are called *merlons*, or *cops*, and the spaces separating them, *crenels*, *embrasures*, or *loops*; through these the soldier discharged his missile, or observed his assailant, while he sheltered his body behind the merlon.

DESIGN XII. will be recognized as the "Tower Hall" of Philadelphia. The owner's selection of the name of "Tower Hall," demanded a feature in the building that should render the appellation at once truthful and appropriate. This led to the result illustrated by PLATE 56. Obligated to labor under the difficulties of an incommodious site, we have chosen a method of embellishment which, though unusual, may nevertheless be regarded as suitable for a building of this class. Though the purpose of the building required a deviation from Norman massiveness, in the general proportions of the composition, yet we are justifiable in styling it Norman, from the character of the principal decorative features employed.

The front is of granite, as shown by the tinted engraving, PLATE 56.

PLATE 57, details of cornice, and windows of the third, fourth, and fifth stories.

PLATE 58. Fig. 1, details of tower and octagonal balcony; Fig. 2, plan of battlements crowning the first section of tower; Fig. 3, plan of upper section of tower.

PLATE 59, details of first and second stories.

PLATE 60, plan and elevation of one section of cases or shelves, for goods.

PLATE 61, vestibule doors.

PLATE 62, exhibits designs for counters; these are to be considered as of general application; they are not prepared with particular reference to any given design.

DESIGN XIII.

A BANK BUILDING.

A BUILDING intended for banking purposes, of all others, should not be of a mean or incommensurable character. The nature of public banking requires a room of considerable dimensions, in order to transact business in a regular and correct manner. A narrow, crowded place, induces a confusion and disorder that is highly detrimental to the correct management of a banking establishment; separate doors for ingress and egress, and separate desks for each distinct department of bank business, are required; yet these desks should be convenient to each other, so that a communication between the several clerks and officers of the institution is readily attainable in business hours, without coming in collision with the numerous transient customers whose interest and connection with the concern requires their frequent presence. A gloomy apartment, with a low ceiling, is not to be tolerated; a business whose vitality is so much at the mercy of the unprincipled, requires light sufficient to detect the faintest tokens of forgery, and to admit of a close scrutiny of every transaction.

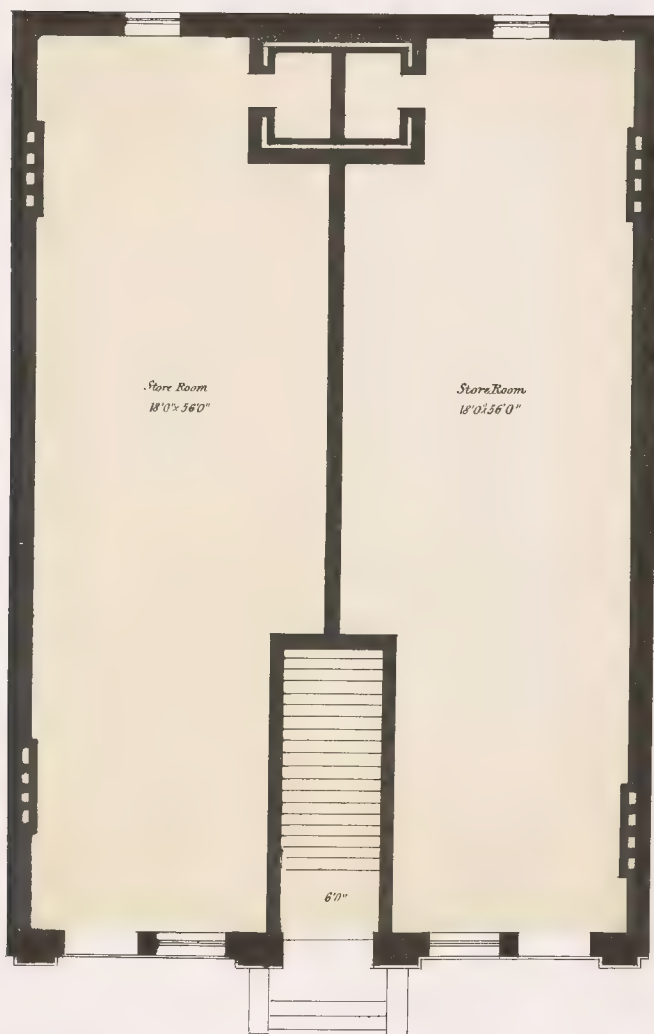
In view of these considerations we have arranged the plan of a bank building, of which DESIGN XIII. is the front elevation, with reference to an economical use of the space allotted to the purpose. We have given a basement, with two apartments, suitable for retail shops, from which an income is assumed to be derived of greater amount than the additional cost of the building thus created would produce, at the usual rates of interest, and by which the structure is benefited in point of elevation. Thus, it is obvious, that while the considerable height required for the ceiling, and the demand for a sky-light, will admit of no arrangement over the banking-room for the carrying on of an additional department of business, a greater altitude is absolutely requisite for the dignity of the front, an economical distribution of which has been here sought, by appropriating it to the purposes above named on the ground floor, and arranging the given space on the second floor for banking uses.

The arrangement of the first floor is simple, and readily understood by the plans of the same, PLATE 63; the store-rooms are provided with a fire-proof to each, which answers as a foundation to that in the banking-room. The banking-room, second floor, PLATE 64, is approachable from the front by a flight of stairs of ample width. The position of the counter is shown by lines on the plan. The front portion of the building is occupied by the cashier's and president's room; the cashier's room communicates directly with the banking-room, as also the president's room, through



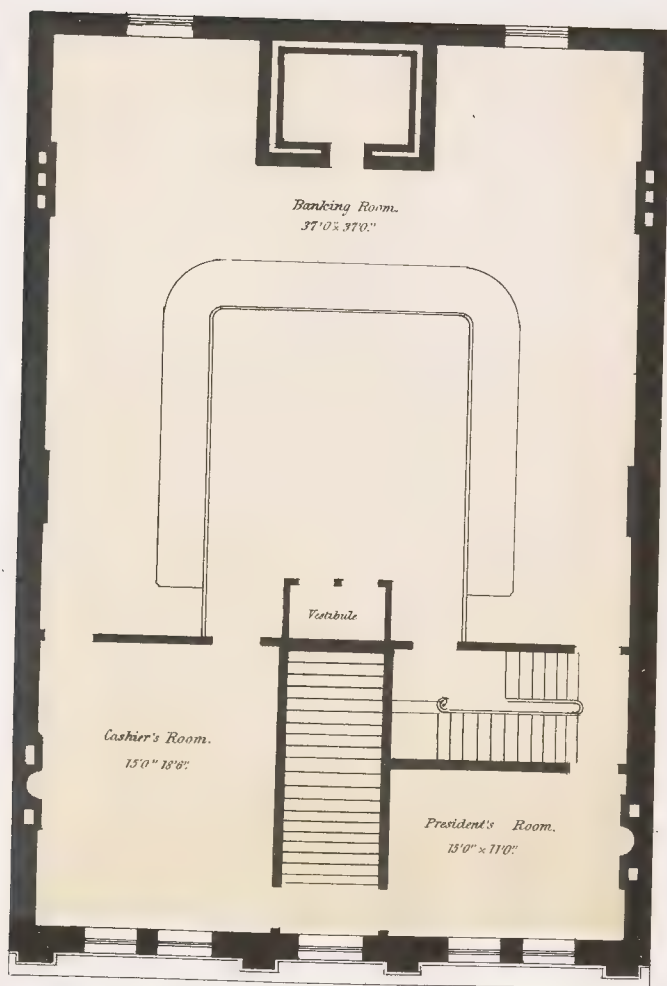
FRONT ELEVATION.

Scale 8 feet to one inch



FIRST STORY PLAN.

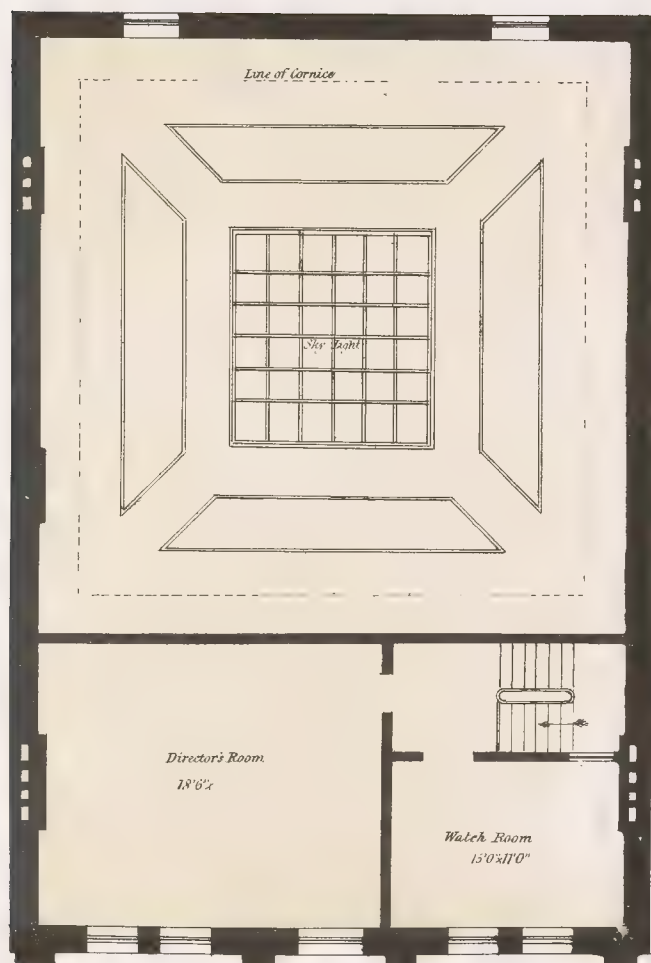
Scale 8 feet to one inch.



SECOND FLOOR.

Scale 3/16" = 1'0" inch.

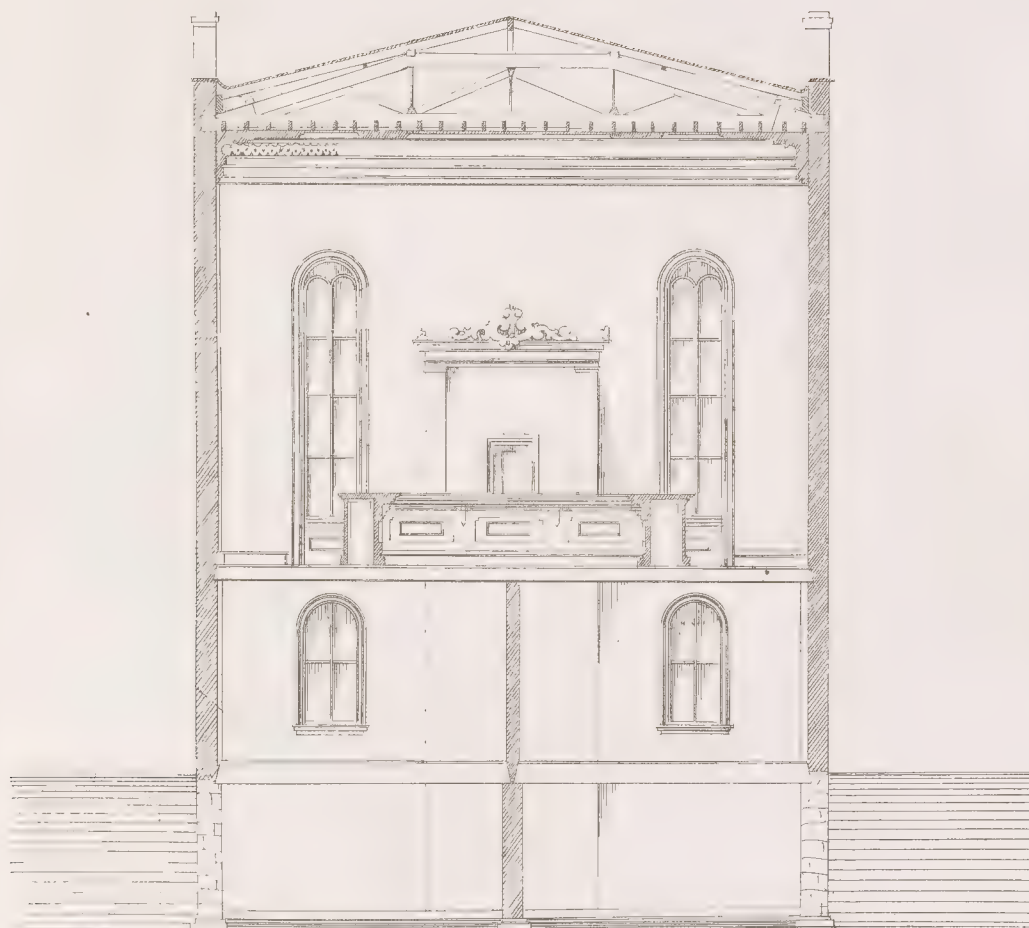
JF Weston & Lath, Phila.



THIRD STORY PLAN.

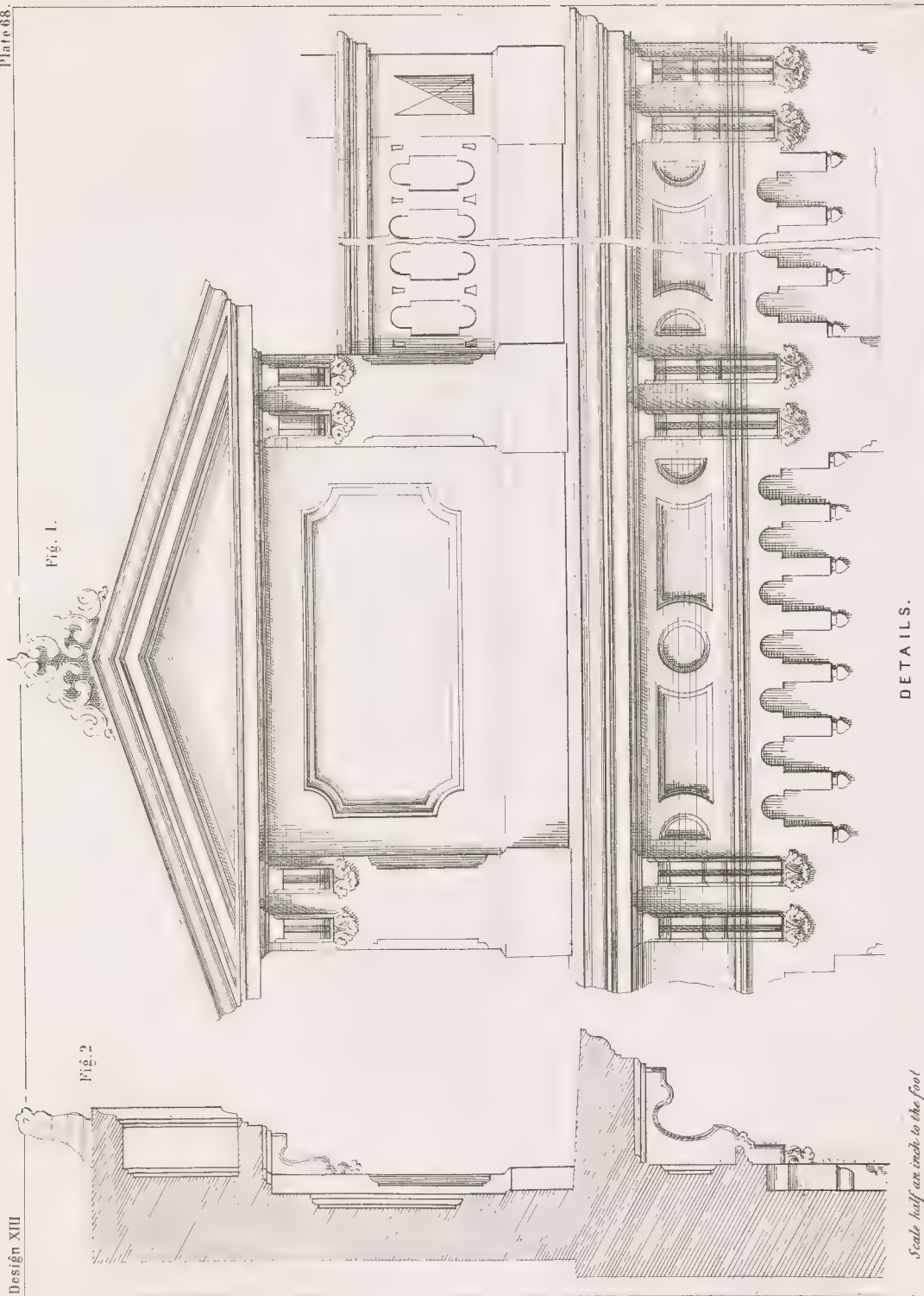
Scale 3 feet to one inch

J.F. Watson & Lith. Phil^a



TRANSVERSE SECTION

Scale 3 Feet to one inch



DETAILS.

Scale half an inch to the foot

Small 5.00 1/2 1/2

Fig 2

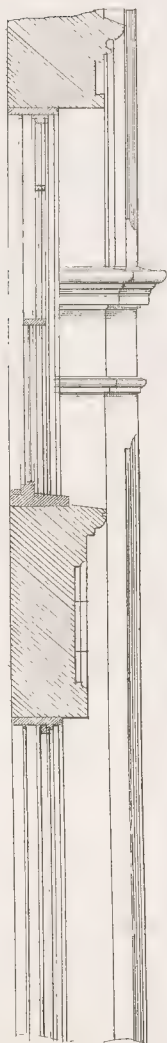
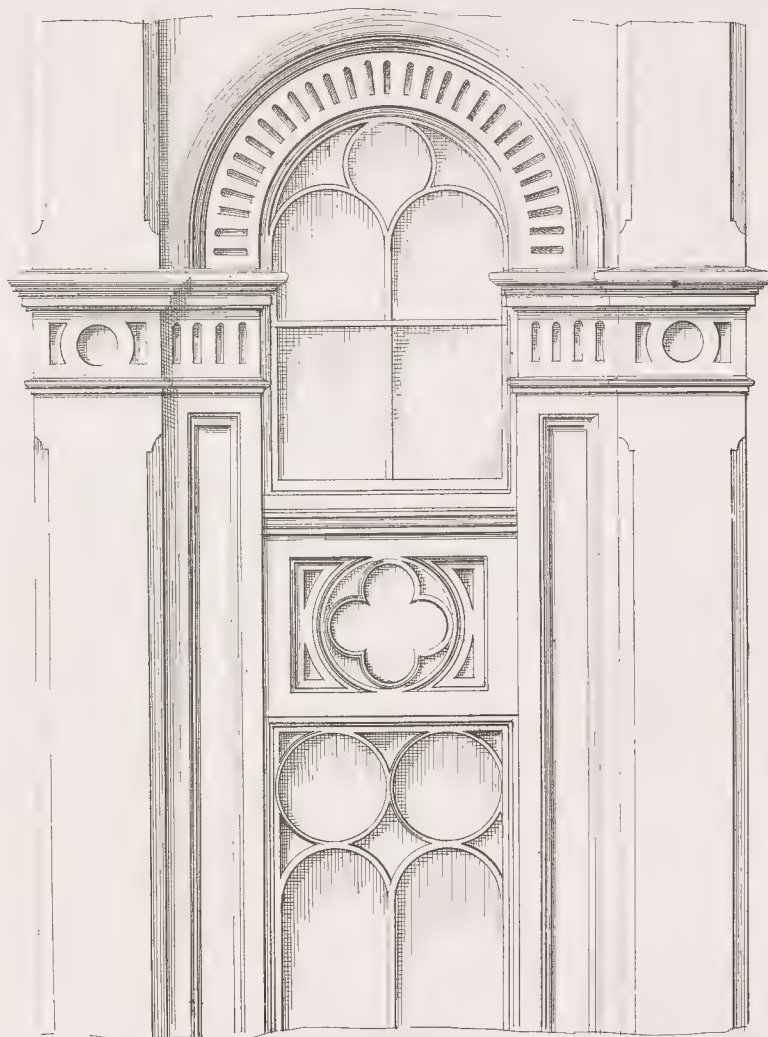


Fig. 1.



DETAILS.

Scale half an inch to the foot

Fig. 2.

Fig 1



Scale half an inch to the foot

DETAILS.

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the side hall. The president's and cashier's room also communicate with each other. In the side hall is placed a flight of stairs, leading to the entresol floor, on which is the room for the meetings of the bank officers, which we have designated the directors' room, and a small room suitable for a watchman's room. PLATE 65 illustrates the arrangement of these rooms, as also the position of the sky-light, and a plain mode of paneling for the ceiling.

In the construction of this building fire-proof materials should have the preference. The first and second floors should be laid in the manner particularly described in the Specification for DESIGN III.; this is necessary, as there is greater danger of fire originating in the store-rooms than the banking-room itself. In France, a method now prevails to some extent of making fire-proof floors in houses, which, although not so applicable to the building now under consideration, nor ever so perfect as the method already prescribed, may nevertheless sometimes be employed to advantage. The joists are roughly boarded, and the surface of this boarding covered with a coat of plaster about eight inches in thickness, upon which a floor of tiles or marquetry is laid. It is to be observed, however, that this mode defends only the particular story which is thus floored, and is not proof against an attack of fire from beneath. As a stairway of wood forms a shaft or conductor to carry the flames to the upper story or stories, the necessity of its being incombustible is rather more binding than that of any other portion of the structure; hence we propose, that in this case it should be built entirely of iron, with the steps corrugated. The fire-proof doors should be double, also of iron, and hung to metal frames securely anchored in the walls, and the rear window shutters lined with sheet-iron. Two furnaces will be required in the cellar, for warming the building.

The walls should all be thick and well-built; a fault too prevalent in the construction of our city buildings is the erection of walls of insufficient thickness. More particularly is this required when the stories are of unusual height. The front is intended to be of brown stone ashlar, securely cramped to the body of the wall, which is brick. Brown stone exists in abundance in New Jersey and Connecticut, and is well known as a durable building material. It is well suited to an edifice of this kind, as also to churches and buildings that demand a dignified or grave expression. The lighter shades of this stone are also very appropriate for dwellings, of which there are several examples in the City of Philadelphia.

On PLATE 66 the height of the stories is given, and the construction of the roof illustrated. The safe, or, as it is denominated on the plan, the fire-proof, is intended to be vaulted at a sufficient height for its intended use, and to extend no higher.

PLATE 67. Fig. 1 shows the main cornice, and Fig. 2 a section of the same.

PLATE 68. Fig. 1 exhibits the details of the second and third story windows, and Fig. 2 a section of the same.

PLATE 69. Fig. 1, details of front entrance, and Fig. 2 a section and profile of the same.

DESIGN XIV.

A GOTHIC CHURCH.

A STYLE of architecture of which the pointed arch is the principal characteristic, is termed the Gothic—an appellation which, though inappropriate as regards its origin and most extended use, has become so identified with the style, and so well understood by all interested in architecture, as to be unalterable. Some have attempted the introduction of the term Christian, others that of English; but what we usually term the Romanesque and Byzantine styles, as they were first used by the Christians, have a pre-eminent claim to the former title; and as the style in question did not originate in England, and was extensively used on the continent of Europe, it cannot exclusively be termed English. Sir Christopher Wren was of the opinion that it was of Saracenic origin; and as it was introduced into England about the time of the Crusades, there seems to be some ground for such a belief. Mr. Ruskin says: "All European Architecture, bad and good, old and new, is derived from Greece, through Rome, and colored and perfected from the East. The history of architecture is nothing but the tracing of the various modes and directions of this derivation. Understand this once for all—if you hold fast this great connecting clue, you may string all the types of successive architectural invention upon it, like so many beads. The Doric and Corinthian orders are the roots, the one of all Romanesque, massy-capitaled buildings—Norman, Lombard, Byzantine, and what else you can name of the kind; and the Corinthian, of all Gothic, early English, French, German, and Tuscan. Now observe: those good old Greeks gave the shaft; Rome gave the arch; the Arabs pointed and foliated the arch." Others have asserted that the pointed arch was suggested by the intersections of the semicircular arches of the Romanesque period. Whatever its origin may have been, it now stands acknowledged as pre-eminently applicable to ecclesiastical building.

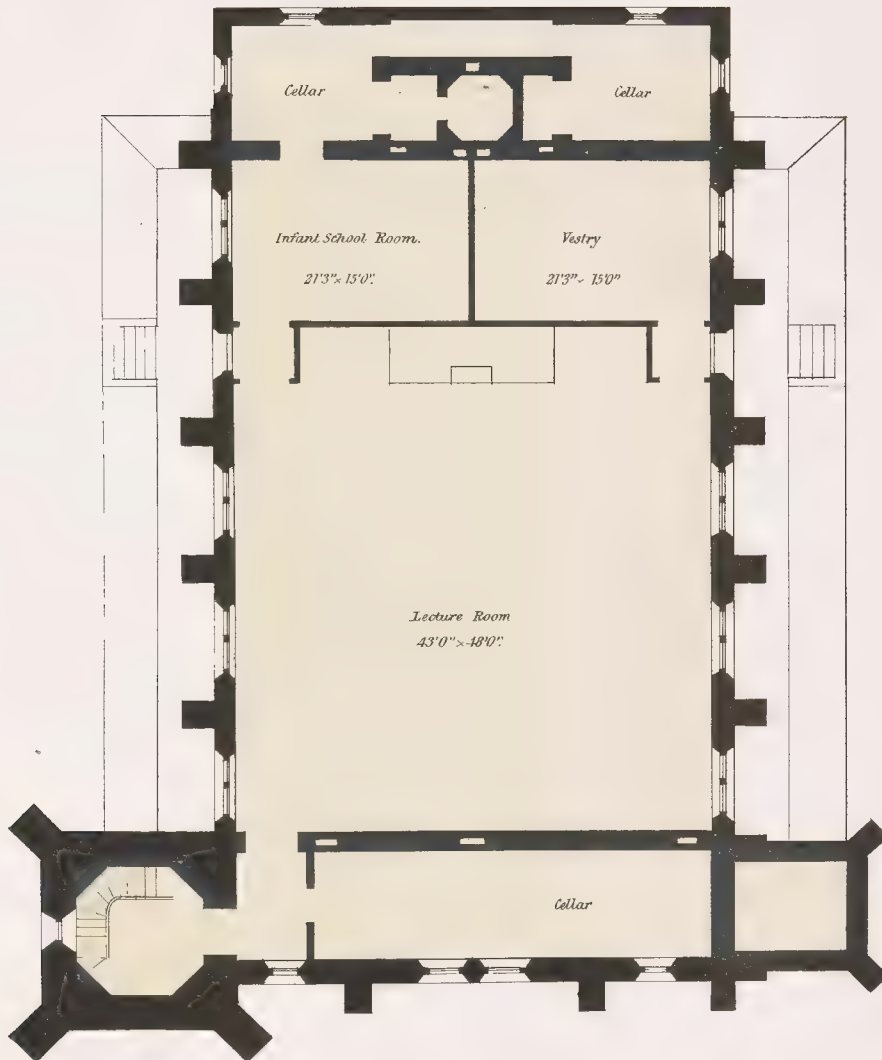
The well-known appendages of this style—the steep roof and spire—have been variously accounted for by different writers, but one of the most rational causes of their origin, and their extensive application in the North, seems to be the necessity of throwing off the snow; another is, that rooms in a roof are comfortably habitable in England which would be untenable in Italy, and that there is a natural tendency in the people of wet climates to live as high as possible out of the damp and mist. This is well known to all familiar with England and Northern Europe. We quote again from Mr. Ruskin: "These two causes, together with accessible quantities of good timber, have induced in the North a general steep pitch of gable, which, when rounded or



Carl Schen Archt

J. F. Watson's Lith. Philad^a

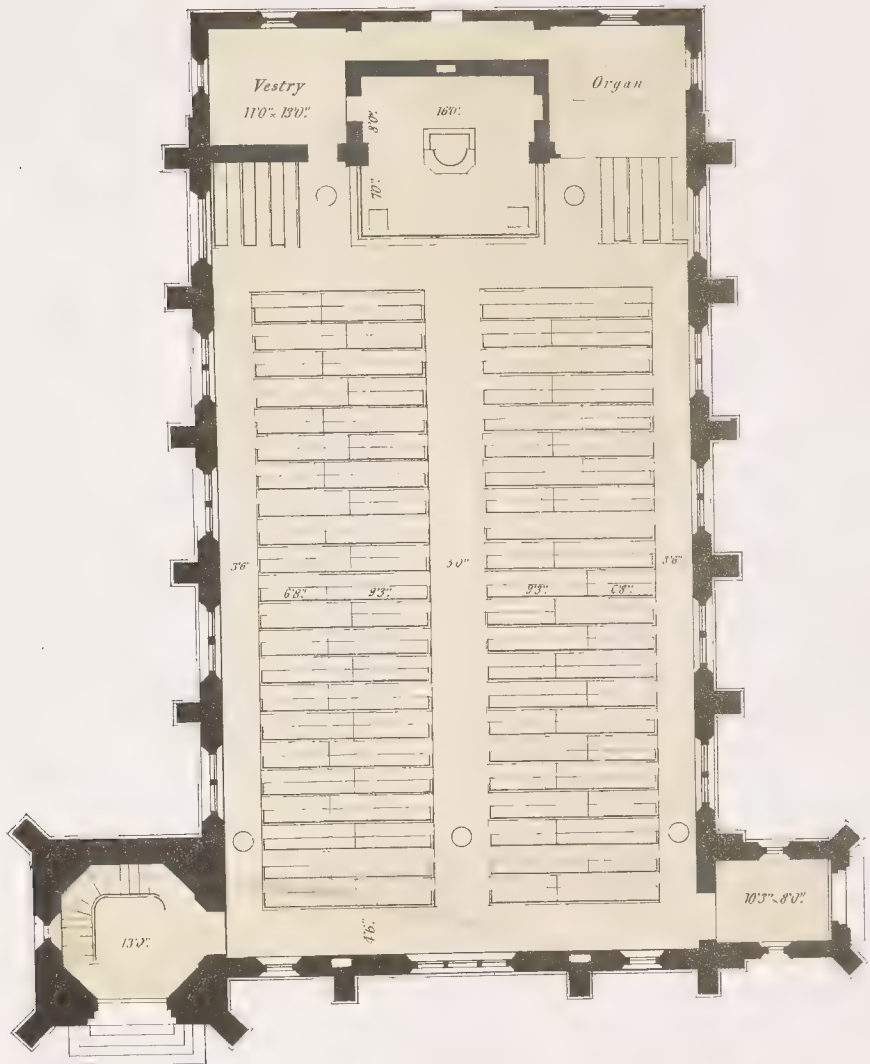
PERSPECTIVE VIEW.



BASEMENT PLAN.

Scale 12 feet to one inch.

J F Watson's Lith Philad^a



PRINCIPAL FLOOR.

Scale 12ft. to one inch

squared above a tower, becomes a spire or turret; and this feature, worked out with elaborate decoration, is the key-note of the whole system of aspiration, so called, which the German critics have so ingeniously and falsely ascribed to a devotional sentiment pervading the Northern Gothic. I entirely and boldly deny the whole theory. Our cathedrals were, for the most part, built by worldly people, who loved the world, and would have gladly stayed in it forever—whose best hope was the escaping hell, which they thought to do by building cathedrals, but who had very vague conceptions of heaven, and very feeble desires respecting their entrance therein; and the form of a spired cathedral has no more *intentional* reference to heaven, as distinguished from the flattened slope of the Greek pediment, than the steep gable of a Norman house has, as distinguished from the flat roof of the Syrian one. We may now with ingenious pleasure trace such symbolic characters in the form; we may now use it with such definite meaning; but we only prevent ourselves from all right understanding of history by attributing much influence to these poetical symbolisms in the formation of a national style. The human race are, for the most part, not to be moved by such silken cords; and the chances of damp in the cellar, or of loose tiles in the roof, have, unhappily, much more to do with the fashions of a man's house-building than his ideas of celestial happiness or angelic virtue. Associations of affection have far higher power, and forms which cannot be otherwise accounted for, may often be explained by reference to the natural features of the country, or to anything which habit must have rendered familiar, and therefore delightful; but the direct symbolization of a sentiment is a weak motive with all men, and far more so in the practical minds of the North than among the early Christians, who were, assuredly, quite as heavenly-minded, when they built basilicas, or cut conchas out of the catacombs, as were ever the Norman barons or monks."

We shall not detain our readers with any further speculations on the subject, but proceed rapidly to notice the progress and decline of the style, as intelligibly as conflicting evidence will permit. Our remarks will refer more particularly to its course in English building, as it appears to be here more distinctly traceable than in the continental structures.

The first innovation on the Norman manner was the pointed arch in lieu of the semicircular. For a considerable length of time some of the details of the preceding style were continued, with some of its characteristic heaviness; but all resemblance to the Norman was rapidly effaced by the development of the peculiar and beautiful characteristics of a style which has received the name of *lancet-pointed*, or *early English*. This style appeared in England toward the end of the twelfth century, and gradually merged into the *decorated*, at the end of the thirteenth. The characteristics of the early English style are the long narrow windows without tracery, placed singly or in groups, as occasion might require; deeply cut, well-defined mouldings, with occasionally sculptured enrichments; the whole arrangement producing a bold and simple effect. The next gradation has been called the *decorated* style: this seems but a continuation of the early English style; its principal features are enlarged windows, with rich and flowing tracery, and a general richness in the details. This style is considered the perfection of Gothic architecture; it prevailed throughout the greater part of the fourteenth century. The last Gothic style, strictly speaking,

flourished from the latter part of the fourteenth to the middle of the sixteenth century, and has been called the *perpendicular*. In this style "the tracery of the window was changed from flowing to upright lines, and the mullions were crossed horizontally by transoms; the same rectilinear arrangement pervaded many of the details; the arches became depressed, while the mouldings and other features continued to suffer a gradual debasement, till their character became altogether changed by an admixture of Italian details, which was speedily followed by the restoration of the classical orders."

It may be observed, that more latitude is allowed in Gothic than in classical composition. There is a possibility of combining features of the earlier and later styles in the same building without a discordant effect. This is done in DESIGN VII.

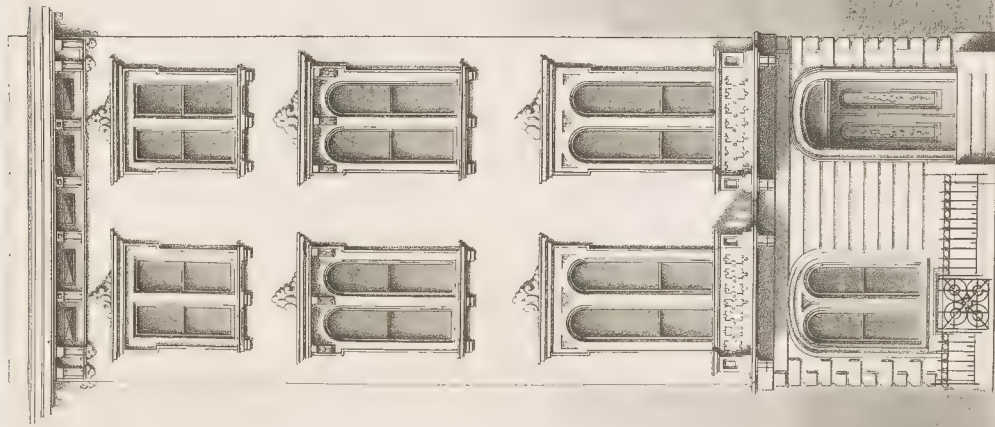
PLATE 72 exhibits the basement plan, with lecture, school, and vestry rooms; and also the position of the furnaces. It is entered from side areas, which are intended to be sunk about four feet below the natural surface of the ground. A flight of stairs leads to the entrance vestibule on the principal floor. (See PLATE 73.) This is also entered in front by a flight of seven steps, and on the opposite angle is an inclosed porch. The divisions of the pews are alternately long and short, so as to accommodate large and small families; this is only desirable in point of economy. All the other arrangements are easily understood by the drawing.

The edifice is intended to be erected of freestone, of which many varieties abound in this country. Rubble-work, pointed, would be preferable, as suiting the style.

DESIGNS XV. AND XVI.

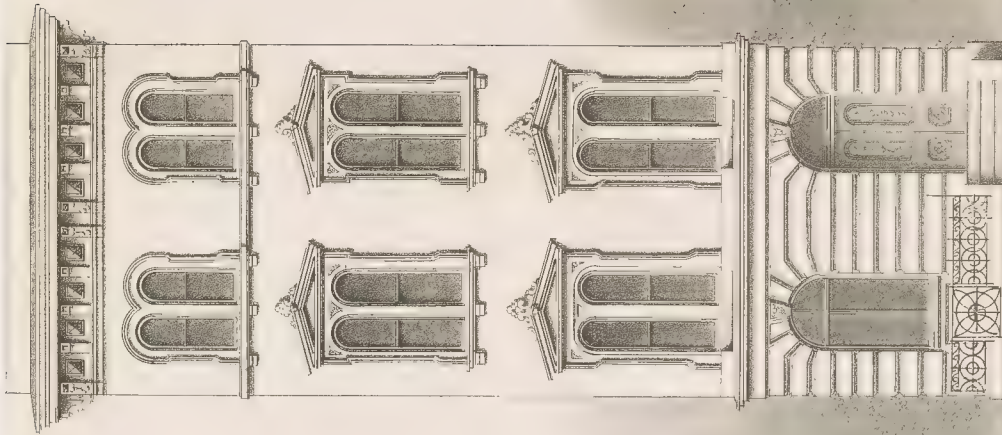
CITY RESIDENCES.

WE offer, on PLATE 74, two designs for city residences, the façades of which are embellished by the same means, though applied with some variation of form. Both designs refer to the ground plans exhibited on PLATES 75 and 76, which have been arranged with a view to comprising as much that will conduce to the comfort and convenience of the inmates as is possible in the given area. Peculiar circumstances, and the different modes of life practiced in different circles of society, to which may be added the interminable variety of notions that exist as to what really constitutes a comfortable and convenient arrangement of the interior parts of a residence, render it impossible to exhibit a plan that would be at once pleasing and satisfactory to all. But our general aim is to exhibit what can be done; leaving to the option and judgment of the projector the adoption



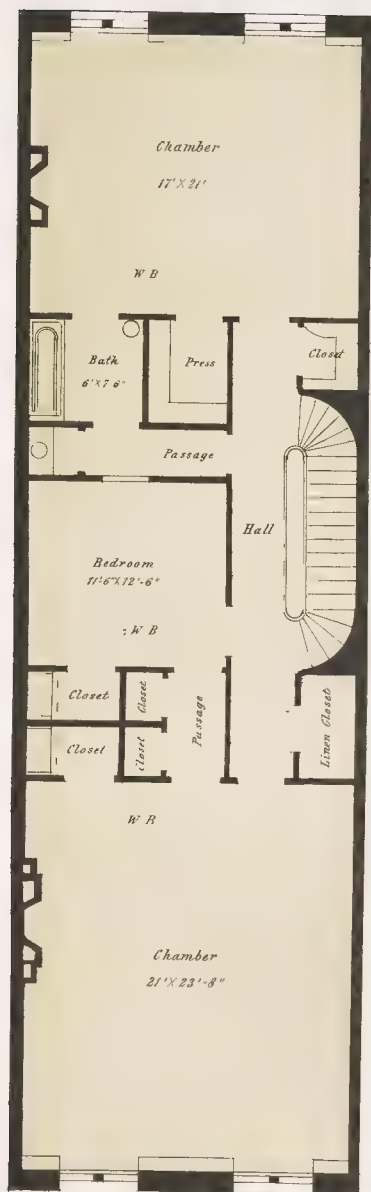
FRONT ELEVATION.

Scale 8 feet to one inch

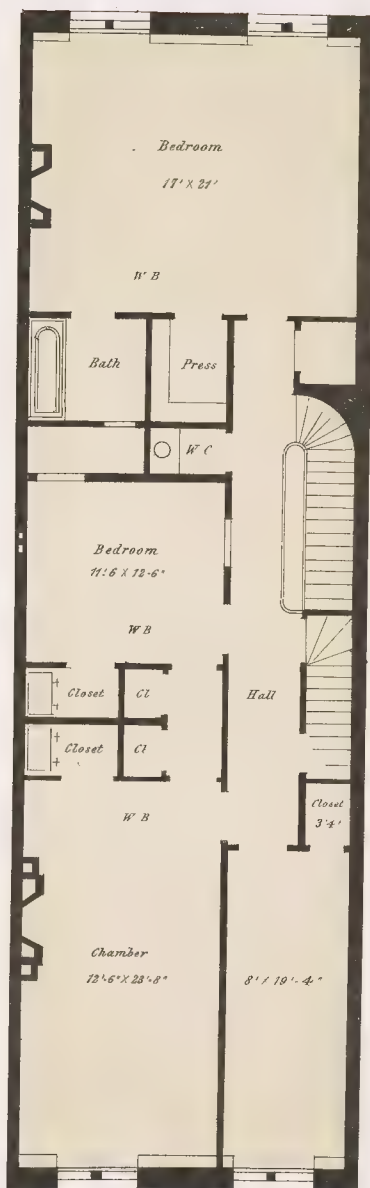


FRONT ELEVATION.

Scale 8 feet to one inch

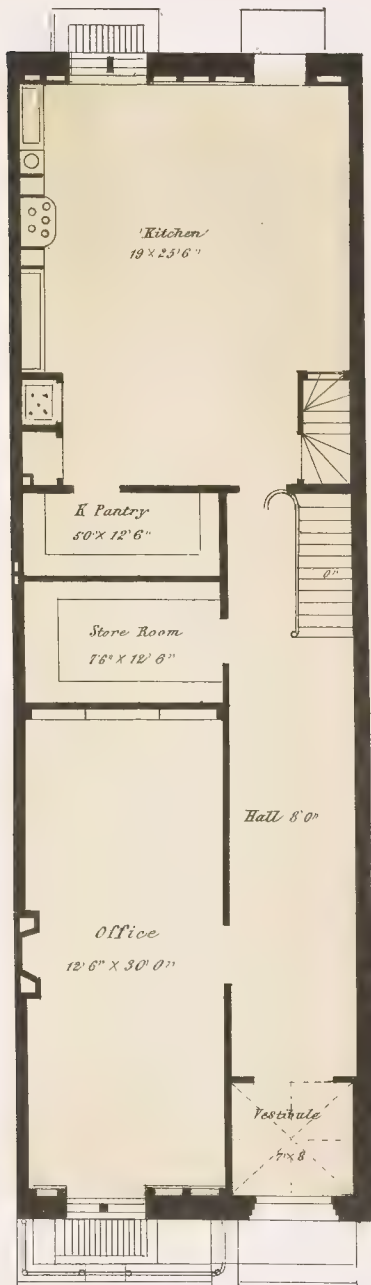


CHAMBER STORY.

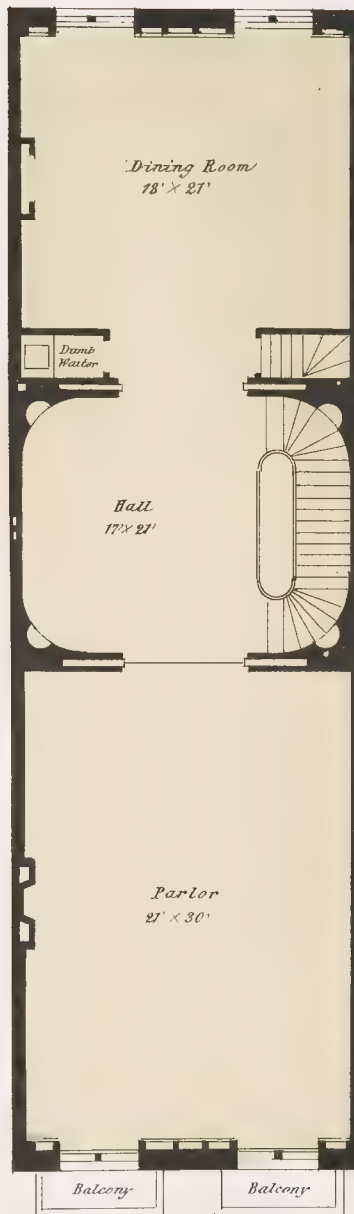


CHAMBER STORY.

Scale 8 feet to one inch.



BASEMENT



PRINCIPAL FLOOR

Scale 8 ft. to One Inch

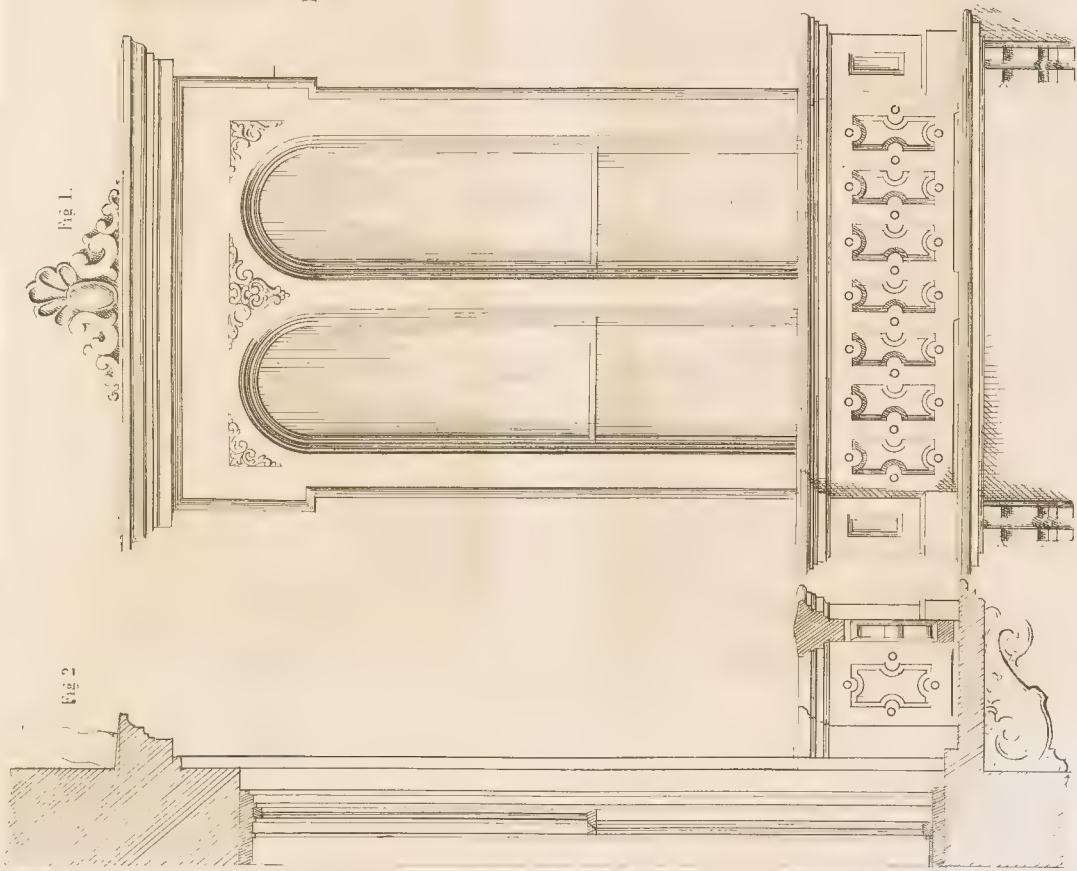


Fig. 2

Fig. 1.

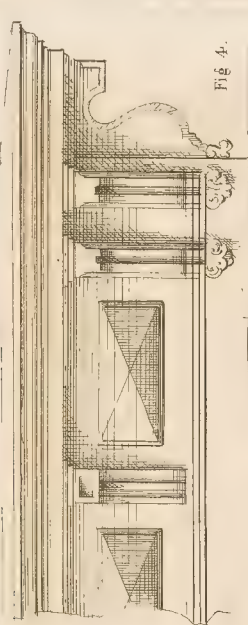


Fig. 3.

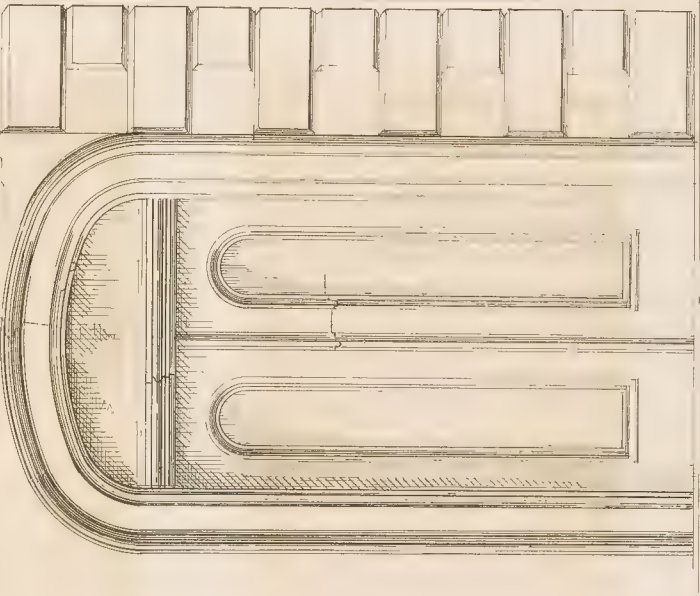
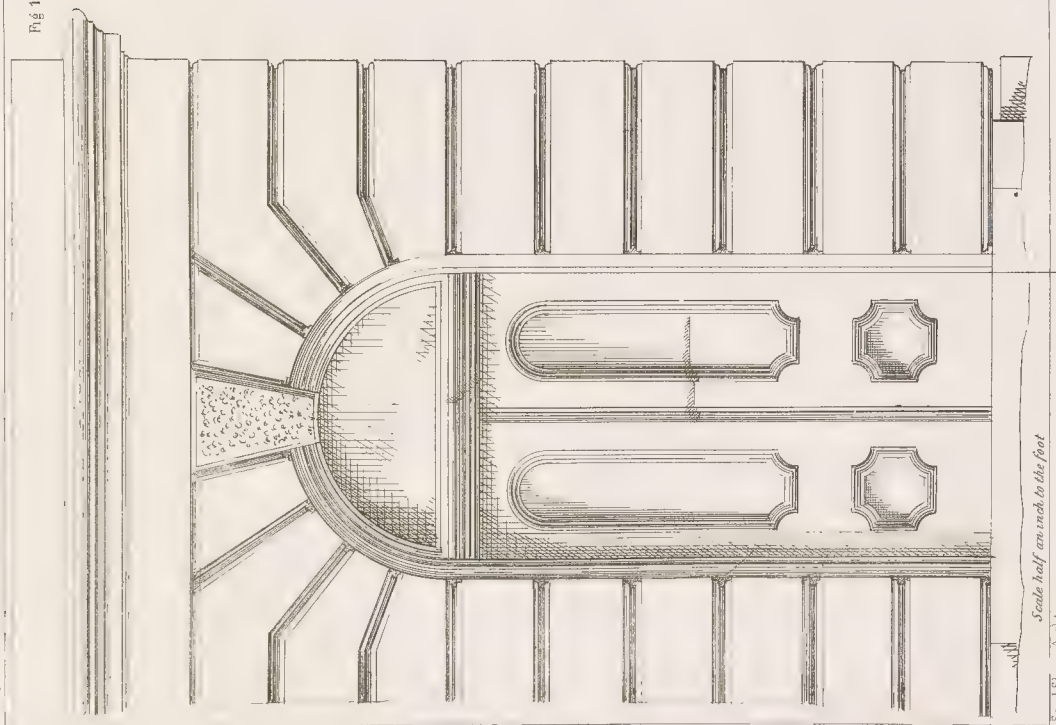


Fig. 4.

Scale half an inch to a foot

DETAILS.

Fig 1.



Scale half an inch to the foot

Saml Sloan Archt

Fig 2

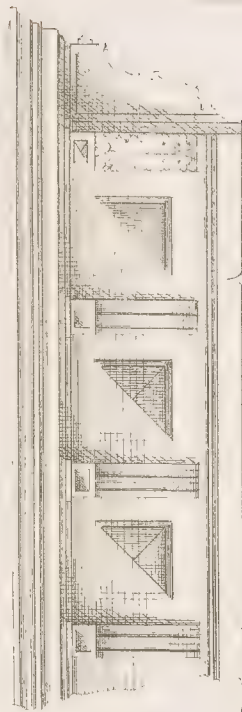


Fig 3.

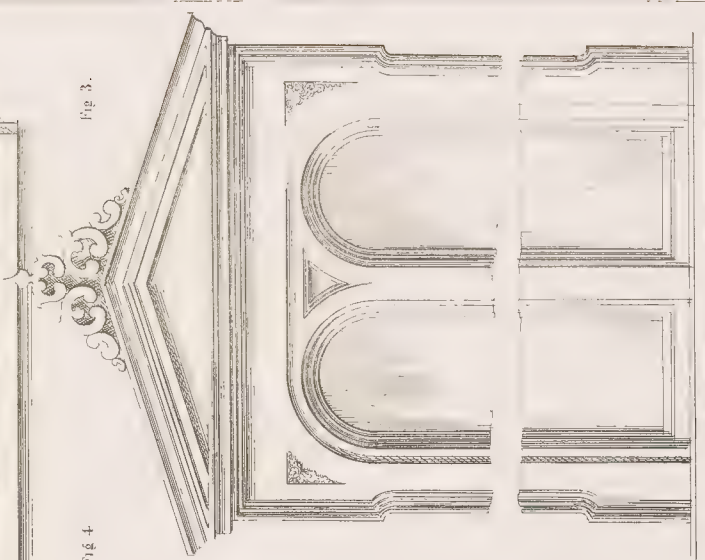
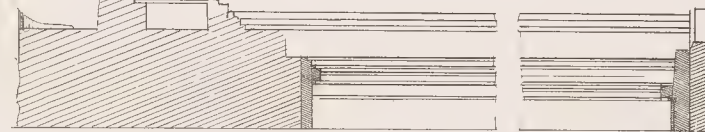


Fig 4



DETAILS.

J. F. W. & S. 1871

or rejection of the minor features, we commend to his special notice that care which has been bestowed in giving to every apartment an unusual amplitude.

The style of our designs is Italian. The basement has the massive Florentine feature of rustication, introduced for the purpose of deducting as much as possible from the great apparent height of the building. The balcony is an ornamental appendage, and is frequently found convenient for the observation of a street scene.

We now proceed to the consideration of the plans, PLATE 76. It will be observed at once, that, as in the plans for DESIGNS X. and XI., we give the denomination of basement to the entrance floor; this is elevated three steps above the pavement line; entering through a spacious square vestibule, with groined ceiling, we find a hall of ample width, presenting a strong contrast when compared in this respect with the majority of those of modern city dwellings. Our preference for a wide entrance-hall is founded on the idea of giving an attractive appearance; as it were, inviting the guest to enter. From the small quantity of light that can be admitted, and the limited space thus allowed for its reflection, a narrow hall is unavoidably dark and repulsive when entered from without. Hence, we have given a wide hall, and appropriated the remaining width of the building on this story for an office or library. This, for men in the profession of law or medicine, is very convenient; for the retired gentleman, who has a taste for literary pursuits, nothing can be more suitable.

Instead of placing the kitchen in the cellar, as in DESIGNS X. and XI., we obtain space for the purpose on this floor by extending the building farther toward the rear. This kitchen is furnished with the necessary cooking apparatus and other conveniences, as exhibited on the plan. A flight of stairs and dumb-waiter communicate with the dining-room above. From the entrance-hall a stairway leads to a spacious hall on the second floor, in the angles of which are formed niches for the reception of appropriate statuary. Beyond this hall is the dining-room, which is well lighted from the rear; a commodious parlor is placed in front; by means of sliding doors this suite of apartments can be thrown into one, thus forming a pleasing and occasionally a convenient communication. The parlor windows extend to the floor, so as to give access to the balconies. The hall receives its light from a sky-light in the roof, through the well of the stairs. On the next floor are two large chambers, one on the front and one on the rear; between these is a smaller one—all provided with capacious closets. Adjacent to the rear chamber, and accessible from a cross-corridor which extends to the roof and is lighted by a sky-light, is a bath-room, etc. On the fourth floor are five sleeping apartments, the arrangement of which, with that just described, will be readily understood by the drawings, PLATE 75.

We have already alluded to the pleasing decorative effect of fresco-painting. The suite of rooms on the principal floor of this building affords a fine opportunity for an exhibition of the taste and talent of the artist. Here delicate delineation, combined with exquisite harmony of colors, is requisite, to give that excellent finish demanded by domestic apartments above all others. When ceilings are high the delineation must be comparatively coarse to be effective; here, on the contrary, where all parts of the work, from their proximity, are subject to close inspection, faulty

drawing, or harsh coloring, though ever so productive of striking effects when remotely situated, must give place to the careful elaboration of whatever may be attempted.

As regards design in fresco-painting, the artist has an extensive field. He has the privilege not only of geometrical lines, but of imitating the choicest examples that nature has set before him; not only may he copy from the animate, but the inanimate; his range is unlimited. From vegetation he may cull wreaths of flowers, and from the world of animated creatures he may select such as suit his fancy, and unite and weave them into an endless and innumerable variety of combinations. Yet this is only allowable in the artist whose imagination is controlled by an educated taste, otherwise he will go astray in a labyrinth of wild conceptions, which, though executed with a ready hand, will not bear the test of refined judgment. As it cannot be taken for granted that all artists are men of genius, it is frequently much better that our embellishments of this kind be in imitation of some well-chosen copy, than that they should have the merit of originality, and, at the same time, be an offence to the eye or an insult to the understanding—not that we would discourage inventive effort, or circumscribe the imagination that is endowed with a capability of superior flights, but we would fain place restrictions on the license of those whose presumption so far exceeds their ability as to place them (in their own estimation) in advance of their time-honored masters.

PLATE 77. Details of DESIGN XV. Fig. 1, second story window and balcony; Fig. 2, section of do.; Fig. 3, main cornice; Fig. 4, front entrance.

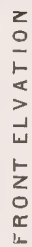
PLATE 78. Details of DESIGN XVI. Fig. 1, elevation of front entrance; Fig. 2, principal cornice; Fig. 3, second story window; and Fig. 4, section of the same.

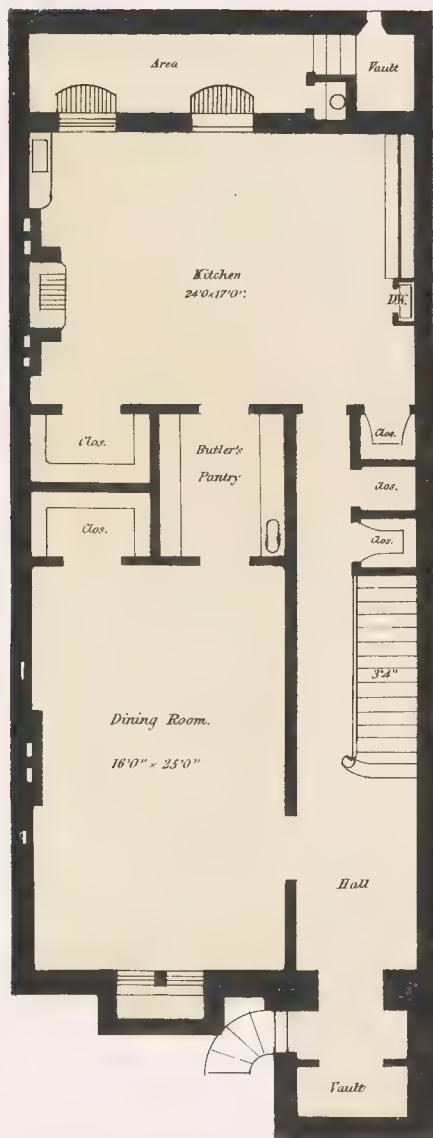


DESIGN XVII.

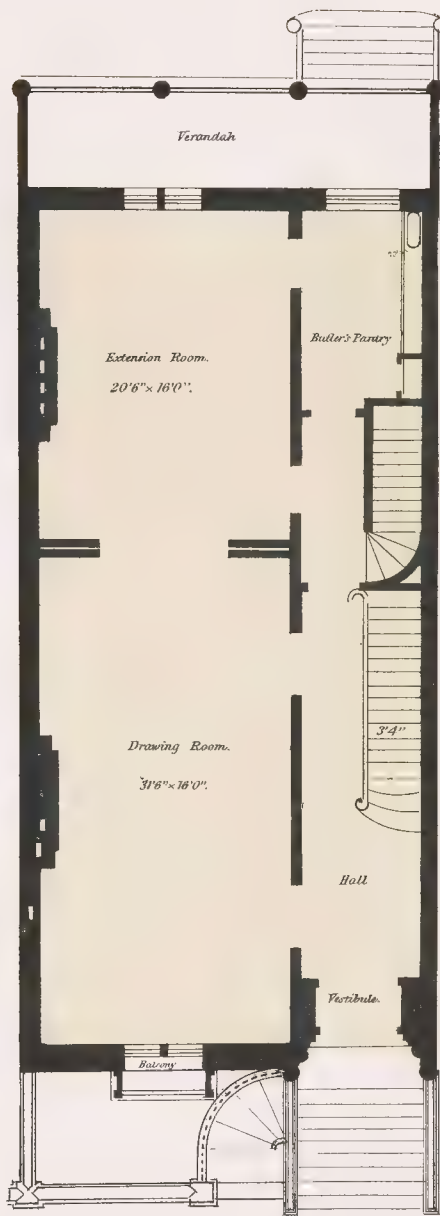
A BLOCK OF DWELLINGS.

THAT the existing condition of our street architecture is the result of different interests and discordant tastes, it requires no acuteness of perception to discover, nor a lengthy examination to verify. In the existing state of things, little else can be expected; among the numerous property-holders generally occupying the length of what is termed a square, it rarely occurs that individuals, when about to build, are actuated by similar motives or are governed by similar circumstances. A feeling of liberality, a lively appreciation of domestic comfort and convenience, and a love of display, may actuate one; while another builds, as it were, from compulsion, and cares not to add



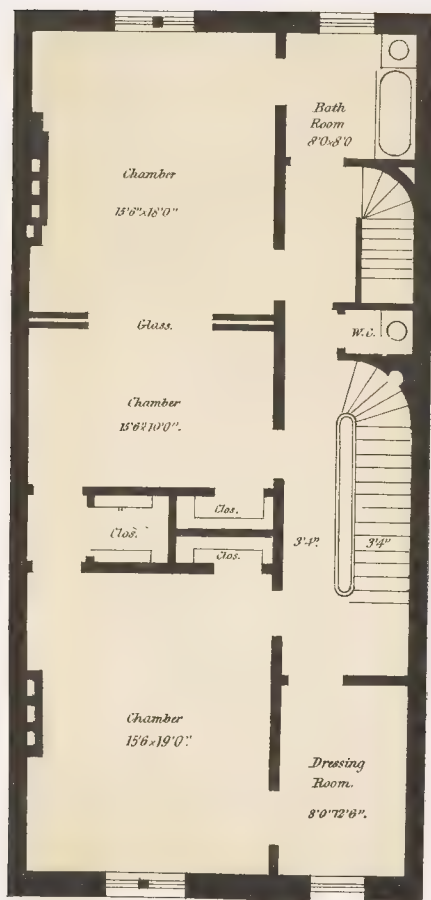


BASEMENT PLAN.

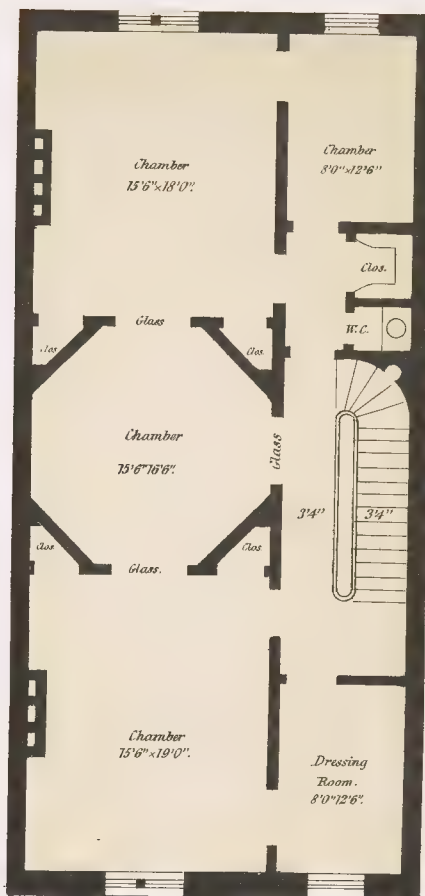


PRINCIPAL FLOOR.

Scale 8 feet to one inch.

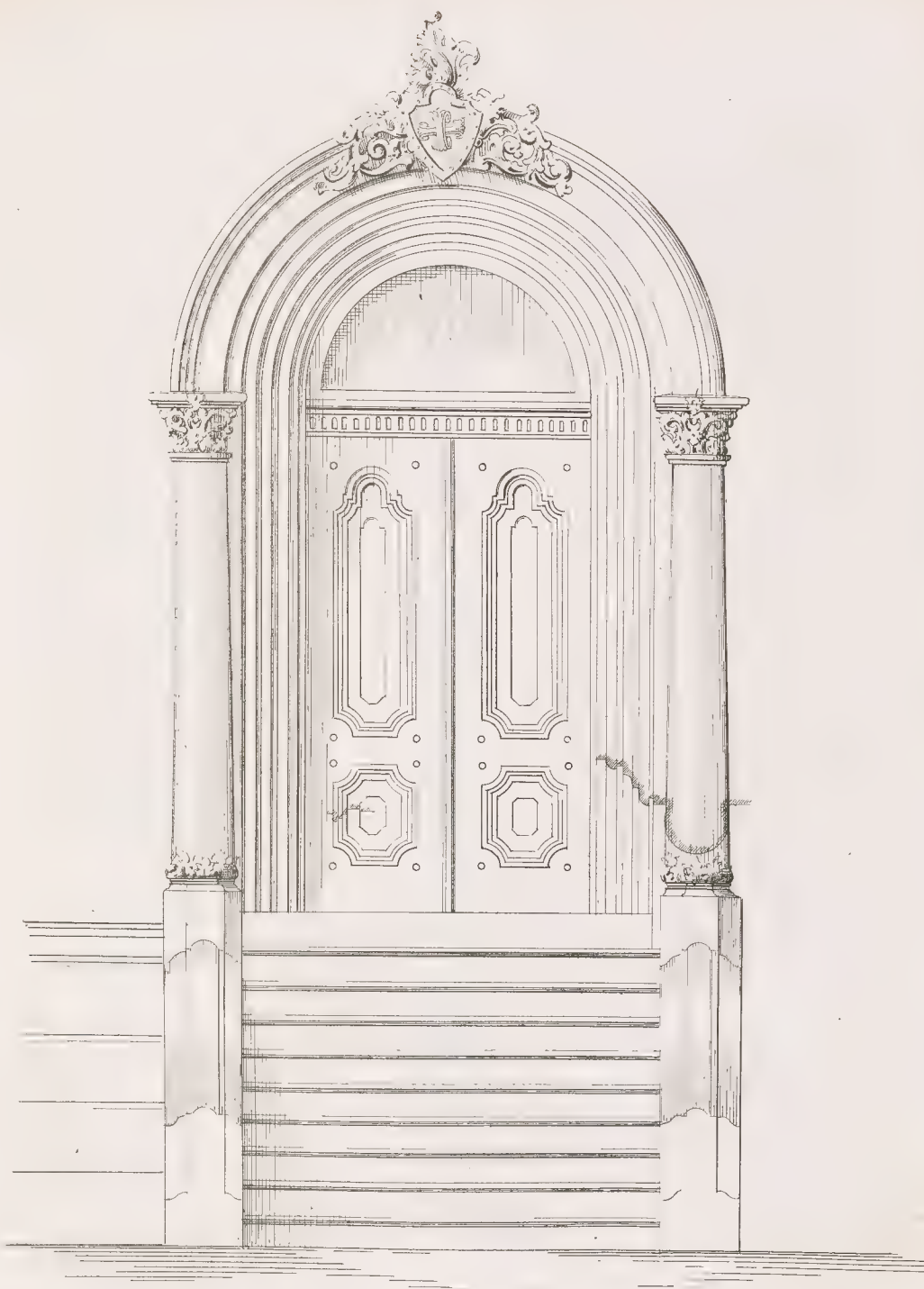


SECOND STORY.



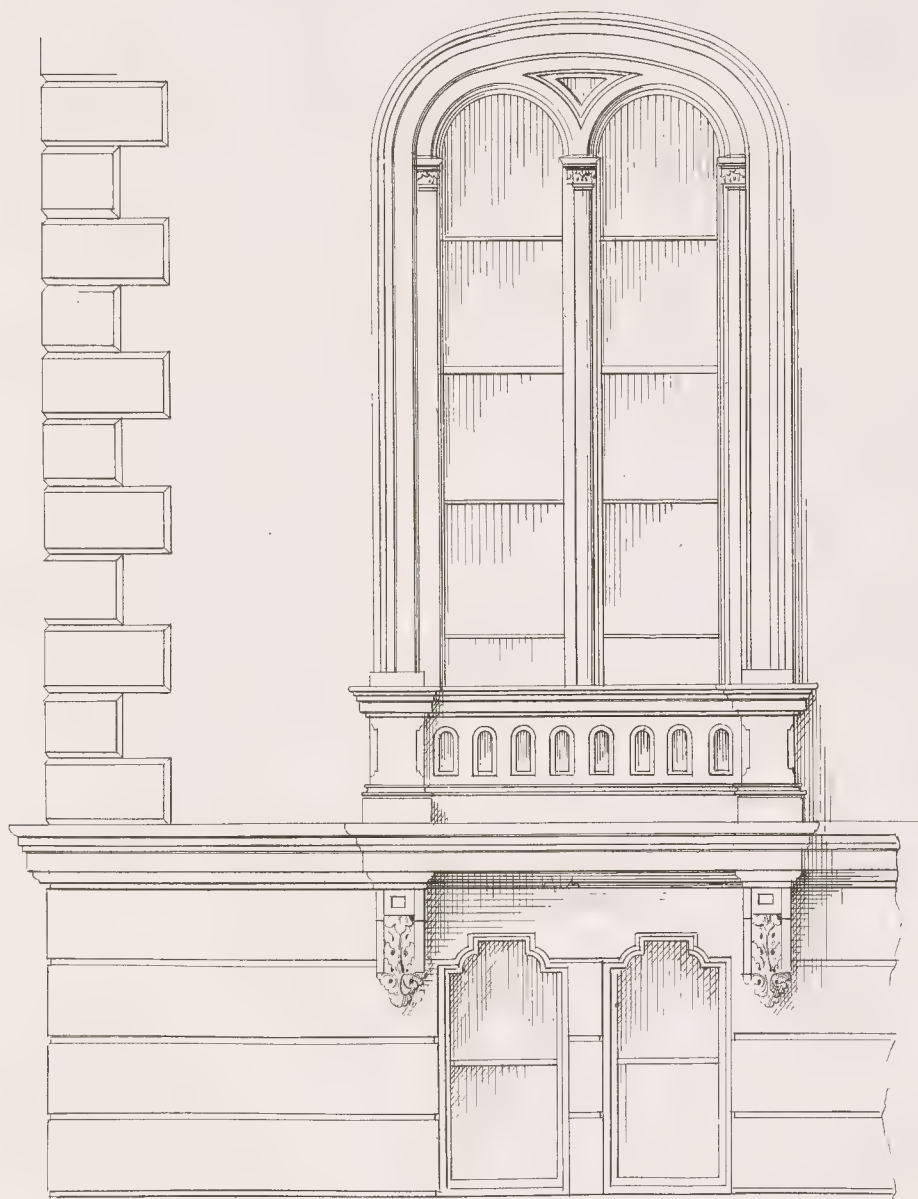
THIRD STORY.

Scale 8 feet to one inch.



FRONT DOOR

Scale $\frac{1}{2}$ inch to the foot

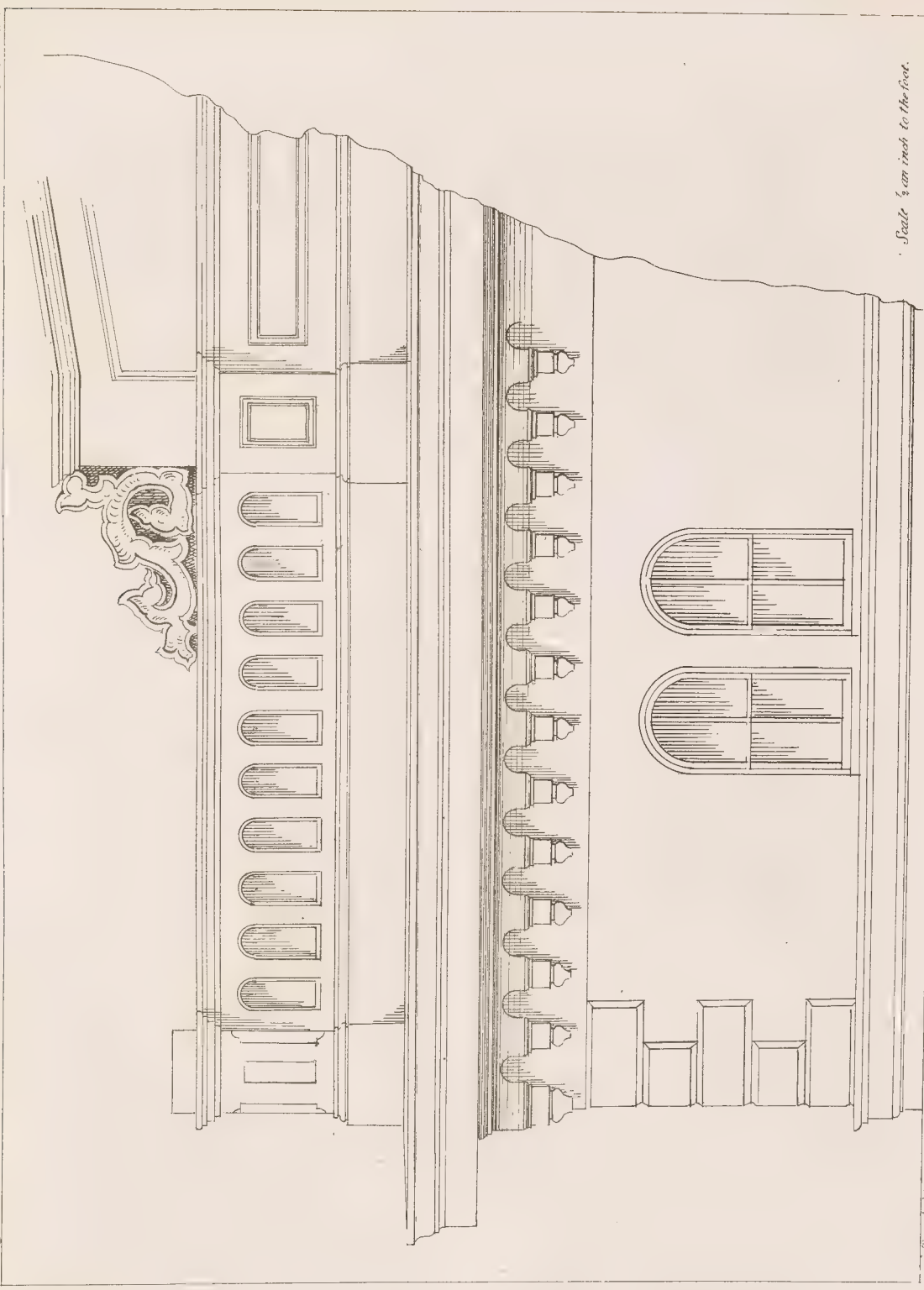


FRONT WINDOW

Scale half an inch to the foot

WATSON & CO. LONDON

See also p. 111.



Scale $\frac{1}{2}$ an inch to the foot.

J. F. A. G. 1841.

J. F. A. G. 1841.

to the cost of his building by transcending the limits of rigid utility. Thus, in traversing our streets, the spectator frequently finds, in a very limited prospect, as great a diversity of appearance as possibly can exist.

A block of houses can be built at less expense, if built simultaneously, than if built separately; hence, if, in the growth of the yet unimproved portions of a city, the requirements of the several owners holding property contiguous to each other can be reduced to system, it is to their pecuniary benefit and advantage to combine their operations, and expend the amount thus saved in the embellishment of the exterior, which, under these circumstances, may become infinitely more worthy to be called an architectural production. On PLATE 79 we exhibit an example for the benefit of a corporation of owners, or a single owner, as the case may be, in which ten houses are proposed to be built in connection, being crowned by a continuous cornice and characterized by similar decorative features. The long façade is varied by two recesses, formed at equal distances from the centre of the block, and occupying equal spaces, breaking the block into five divisions, of which the centre and two extremes project, thus affording an opportunity for the introduction of slightly varied yet harmonious forms of decoration.

We leave the reader to imagine the effect of this sort of building when carried to a considerable extent; some may argue that there is too much uniformity in the idea, and that such a continuous mass of building will weary the eye with monotony; to all of which we answer by referring to Paris, where ranges of building are extended to great length without change of style, presenting no opportunity for contrast, and with such an effect as to give the spectator the impression that the architecture could not be improved by contrast with anything of a different character. Where the treatment of a large mass of building has been studied, and the composition arranged with regard to architectural effect, great dimensions are always in the architect's favor; they assist him to accomplish a desideratum which can scarcely be supposed attainable in small masses—grandeur. Hence, in the stupendous piles of building of which we have just spoken, the introduction of any strikingly dissimilar parts, either in size or form, seems unnecessary, as the appearance of a structure that is really grand is enhanced but little by comparison.

Imagine several squares in length in some part of Market or Broad Street, built up of beautiful stone to the height of six stories, with here and there an occasional projection, decorated with a pilastered or columniated front, and all crowned by a proportionate cornice; and contrast this picture with the present state of these streets, or even some of those which can boast of better architecture, and we are inclined to think that the verdict will be in favor of such a manifest improvement.

But DESIGN XVII., while it exemplifies to some extent the foregoing remarks, is equally illustrative of the expediency of this mode of building, when considered in a pecuniary view; this is so self-evident as to need no explanation; every one is aware of the advantages afforded by wholesale dealing in mercantile business, and similar results will naturally follow the application of this principle to large transactions in the building line.

We will now consider the ground plans. Premising that the cellar is intended to be occupied

by a heating apparatus, and used for the stowing of fuel, and such general purposes as may be found suitable, we next describe the basement. The floor of this is about four feet below the level of the pavement line. The principal compartments are a kitchen and dining-room. A hall, which is entered from the side-walk by a descent of four steps beneath the entrance to the principal floor, affords a means of separate egress to either of the apartments, and space for a stairway, communicating with the principal floor. The kitchen is intended to be furnished with the modern improvements in cooking and warm-water apparatus. Rear of the kitchen is an area, which is lighted over the top of the wall represented on the drawing; the space between the floor of the veranda above and the top of this wall should be left as open as possible, in order to facilitate the admission of light to the kitchen. The communication with the cellar is beneath the stairs in the hall.

Proceeding to the principal floor, we find the main stairs placed in a wide hall, and a flight of private stairs on the rear extending to the second story. Communicating with the drawing-room by sliding doors is an extension-room, which, at the option of the occupants, may be used as a dining-room—a butler's pantry and dumb-waiter being placed contiguous for the purpose. Rear of the building is a veranda, which may be open, or inclosed with glass, at pleasure. Ascending the main stairs we find on the second floor, PLATE 81, three fine chambers, with adjoining closets, a dressing-room, and bath-room; on the third floor, also, are three chambers, with a small dressing-room in front, and a corresponding side-chamber on the rear. We conclude this description by calling attention to the yard in front, occupying the space between the double flights of front entrance steps, as being an ornamental and useful appendage.

PLATE 82, details of front entrance.

PLATE 83, details of principal story window.

PLATE 84, details of main cornice and attic window.

DESIGN XVIII.

A STORE-FRONT.

THIS front is adapted to a crowded locality, and is intended to be executed in stone. The tinted engraving conveys a very good idea of the stone of the Caen quarries, France. No accompanying plans are given, as the arrangement of sale-rooms depends almost entirely on the peculiarities of the business and the particular notions of the proprietor.

PLATE 86 exhibits the elevation, and section of front entrance.

PLATE 87, the details of second and third story windows.

PLATE 88, the third and fourth story windows, and main cornice.

In this connection it may not be amiss to make a few remarks, historical and general, on the laying out and building of cities. The account of the mode of marking out the site for the foundation of ancient Rome, though somewhat fabulous, may be regarded as interesting. The site fixed upon for the city was the Palatine Hill, and the boundary line was marked by Romulus himself, with a plow, the coulter of which was brass, drawn by a yoke of cattle. He held the plow himself, making a deep furrow for the line of demarkation; the people followed him, throwing inward the clods of earth which the plowshare happened to turn outward, and when they came to the place where they desired to have gates, they took up the plow and carried it. This ceremony signified that plenty in cities depends on the fruitfulness of the surrounding countries. All this was done after the gods had been consulted for the most propitious spot. Every man having chosen his ground built upon it according to his fancy, without any regard to the regularity or beauty of the future city. Such was the beginning of Rome, the subsequent mistress of the world.

The origin of London is involved in obscurity; it remains a matter of dispute whether it was founded by the ancient Britons, or by the Romans during their occupation of the Island of Great Britain. Be this as it may, we find the streets narrow, crooked, and irregular—consequences resulting from the natural growth of a city as distinguished from the development of a judicious plan. It also appears that the houses were mostly built of wood up to the time of James the First, who wisely passed a law, in the second year of his reign, enjoining that all buildings hereafter erected in London were to be made more durable, uniform, and comely. He directed that all new buildings should be of brick or stone, for the double purpose of checking the rapid annihilation of the native timber, and insuring the city in some measure from the liability to destruction by fire.

Nearly all cities which can lay any claim to great age are of a confused and irregular plan. Even those commenced in the infancy of our own country, can boast little of superiority over foreign cities in this respect. With the sole exception of Philadelphia, those on the sea-board bear evidence of being the result of confused, spontaneous progress, rather than the far-seeing calculation of a founder. In point of picturesqueness this irregularity may be desirable, but as regards convenience, and the adaptation of the thoroughfares of a city to the purposes of business, (which is certainly a matter of primary importance,) all will agree that a regular arrangement should have the preference. Frequently, however, the peculiarities of the location have much to do with the direction of streets. Thus in a situation like that of Pittsburg, the course of the two rivers at whose junction it is built, and the abruptness of the surrounding hills, renders a satisfactory rectangular arrangement impossible. Under such circumstances, nothing but great natural advantages can atone for the absence of this artificial convenience.

In determining the width of streets, the prospective importance of the place may be taken into consideration; as an illustration, any one will admit that an inland town does not require the width of thoroughfare necessary in a large commercial depot. The improvement lately introduced to facilitate communication between different parts of our principal cities—passenger railways—are destined to be universally adopted; at least, as far as the necessity for them will justify. In view of these considerations, we are inclined to the opinion that no street should be less than thirty feet in width between the sidewalks; they may range from this to sixty feet, and for the sake of distinction from the ordinary streets a principal street may be much wider.

The height of the buildings, where erected in contact with each other, has a considerable influence on the apparent width of a street; as an instance, we may cite Broadway, New York; this is well known to be really of spacious width, yet a stranger is not struck with its appearance of amplitude. This is owing to two causes; one of which is the great altitude of the adjacent buildings, and the other its being constantly crowded with vehicles.

The paving of streets is one of the most beneficial municipal regulations that has been transmitted to us from our ancestors. Several cities had paved streets before the commencement of the Christian era; nevertheless, those which are at present the ornament of Europe, (Rome excepted,) were destitute of this great improvement till about the twelfth century. We are told that the Carthaginians first paved streets, and that their example was copied by the Romans. It is said, however, that Semiramis paved highways long before that period; and the streets of Thebes, and probably those of Jerusalem, were paved; but neither the streets of Rome, nor the roads communicating with it, were paved during the time of its kings. The precise period at which the Romans began to pave cannot be precisely ascertained; it is variously supposed to have been about five or six hundred years after the building of the city. Streets paved with lava, having deep ruts, made by the wheels of carriages, and raised footways on each side, have been found in the disinterred cities of Herculaneum and Pompeii.

Of modern cities, the oldest pavement is commonly ascribed to that of Paris; but Cordova, in Spain, claims to have been paved in the ninth century, or two centuries before the streets of the



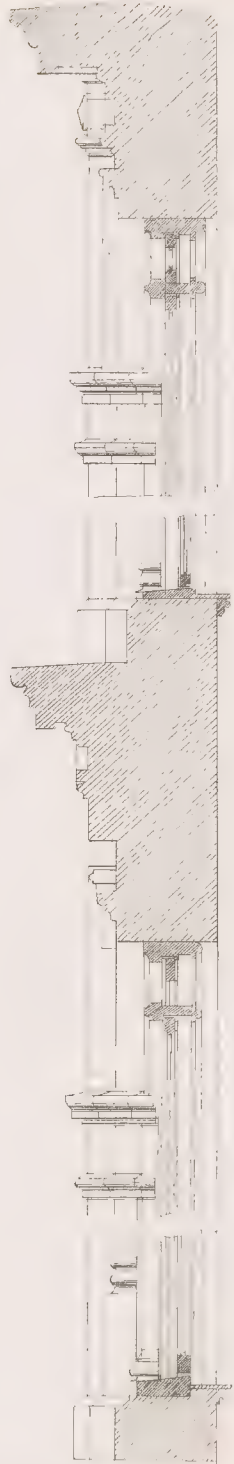
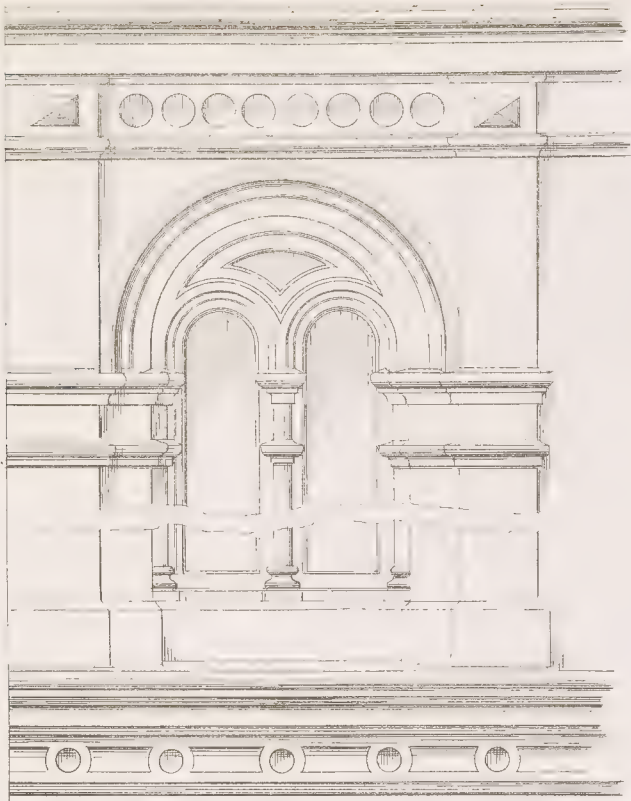
FRONT ELEVATION.

Scale 8 feet to one inch.

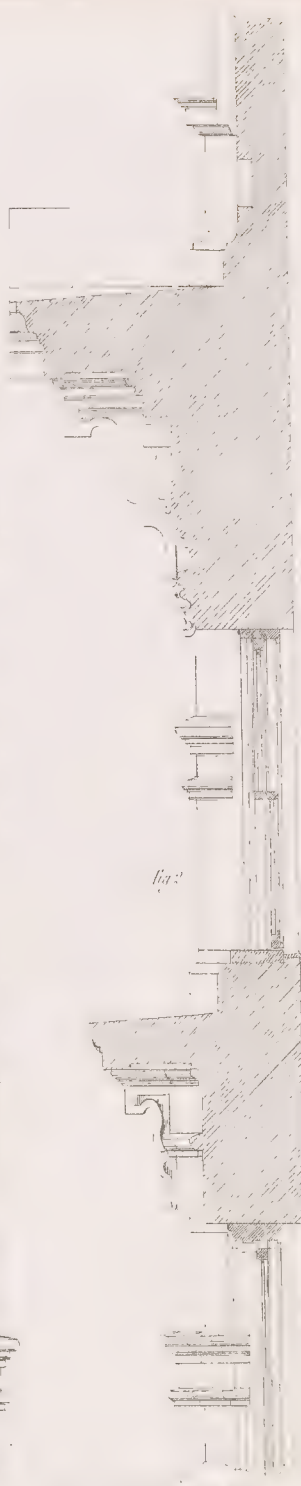
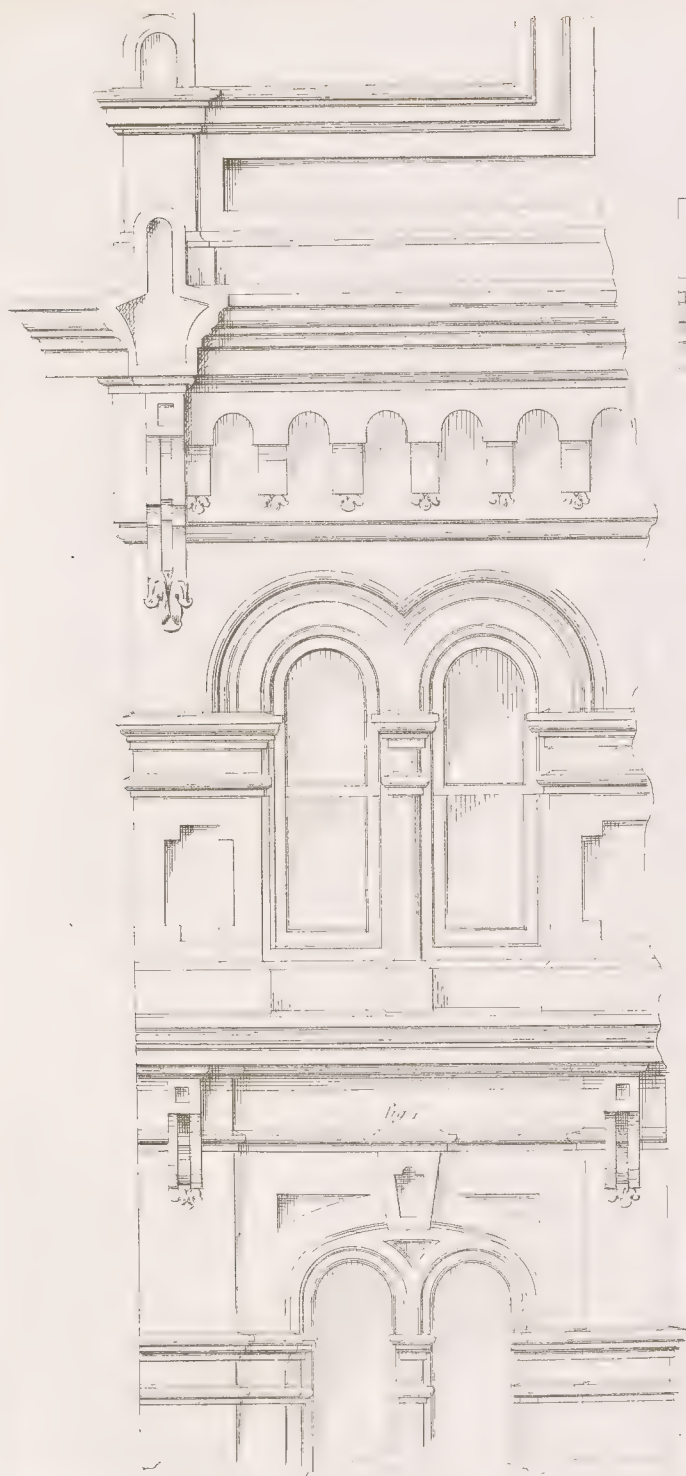


Scale half an inch to the foot

J. H. Watson's Lith. Press.



Scale 1/4" = 1' 0"



North hall in the West

French capital were thus improved. The streets of London were not paved at the end of the eleventh century—nor does it appear when paving was first introduced; it is known that several of the principal streets were paved the first time, by royal command, in 1417; but it is quite probable that a considerable amount of paving had been done before this period.

Various methods of paving are now in use in this country. The only one of these which can be fully recommended for the carriage-way as desirable and durable, is the cubical block. An improvement on the present mode, as practiced in this city, would be to diminish the size of the blocks to about four by twelve inches, with a vertical depth of eight inches, and lay them with open instead of close joints, and these partially filled with cement. This is the method now adopted in the English capital.

We cannot forbear an expression of our aversion to the use of the cobble-stone, so prevalent in our streets; their form precludes all possibility of a certain footing, and as absolutely prevents a solid and uniform surface. Iron has been used to some extent, but we are not prepared to recommend it for carriage-ways.

In Paris, France, a combination of asphalt with other materials is being used with great success; it is spread over a bed of concrete, and being impenetrable by water, forms a beautiful pavement both for carriage-way and sidewalk. Such is its smoothness and apparent elasticity, that carriages roll over it almost as noiselessly as the gliding of a Venetian gondola. It is said that it will not endure the variableness of our climate, but we are disposed to doubt the validity of this objection to its introduction here.

For sidewalks, smooth flag-stone may be reckoned a very superior article. Smooth hard bricks are an excellent substitute, particularly when laid on concrete. The ordinary mode of brick-paving is objectionable in a wet climate, on account of the yielding of the earth beneath, when saturated with water, which a bed of concrete prevents.

DESIGN XIX.

A CITY RESIDENCE.

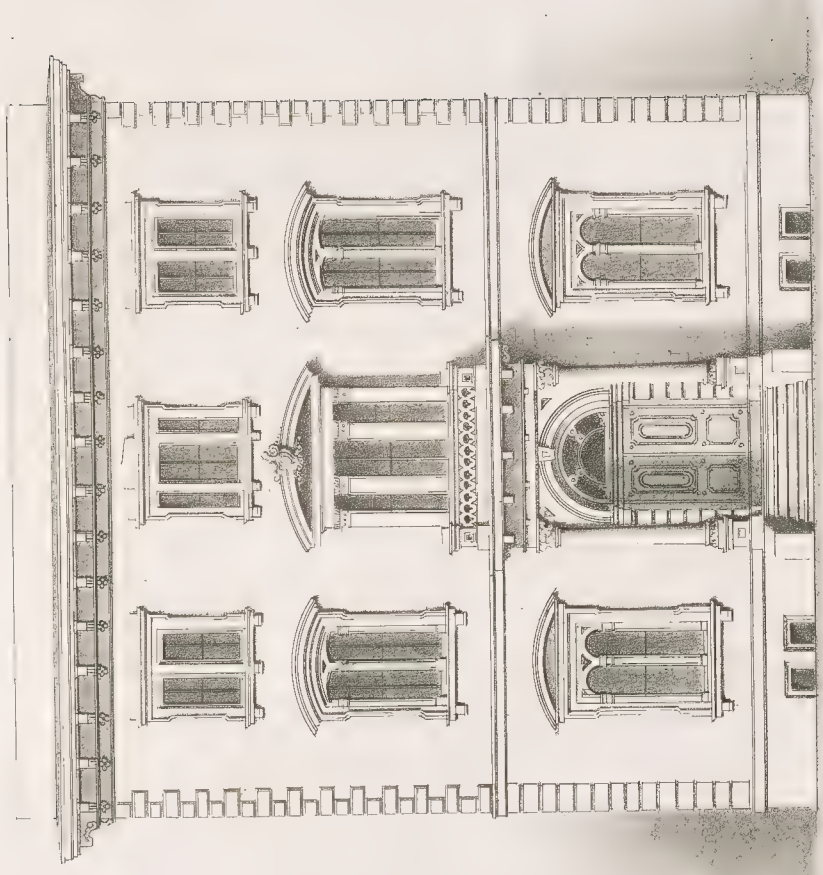
"Neither over-deck nor leave it wholly bare."—POPE.

WE have exhibited several designs for single dwellings, so called from their having but a single room in width on the plan, exclusive of the hall, and have shown, with some variety, the amount of convenience attainable in houses of this kind. It now remains for us to propose more commodious plans, arranged for the use of the wealthy, who desire greater variety and amplitude in their apartments.

Whatever may be the effect of circumstances in forming and modifying our ideas of living, there can be no doubt that, naturally, the human mind finds little pleasure in the contemplation of contracted apartments, either as a retreat from business or a place of retired and domestic enjoyment. We shall not stop here to say how much the mind is influenced by the closeness of a prison-cell, or by what gradations it eventually forms an attachment to cramped and gloomy abodes; we take it as an axiom, that, abstractly considered, space is never displeasing. And when we further consider that a certain amount of room is requisite for the enjoyment of even the absolute necessities of life, it does not appear strange that, as the capacity for enjoyment is cultivated, in like proportion does the demand increase for extended limits and luxurious concomitants.

DESIGN XIX., and the accompanying plans and sectional drawings, exhibit a plain but ample double dwelling, that boasts rather of just proportions than a meretricious display of decoration.

A superabundance of carving attracts and pleases the uncultivated eye, but is equally repulsive to the refined understanding. All attempts to conceal bad proportions by an extravagant exhibition of mouldings and sculpture must forever prove abortive, as such a mode is opposed to the basis of architectural truth. Ornamentation should be given rather to display some portion of the design than to hide it; frequently it bestows a complete finish on some apparently unfinished point, yet it is better that the point should be left incomplete than that it should be overloaded with such surplus of ornament as to render the subject of decoration itself insignificant. If we take the cornice of the building now under consideration, all will admit its value as a decorative feature, but its utility makes its appropriateness absolute; its beauty springs partially, if not wholly, from the idea that it suggests of shelter to the walls, and it is perfectly natural that we should admire it.



FRONT ELEVATION.



PRINCIPAL STORY.

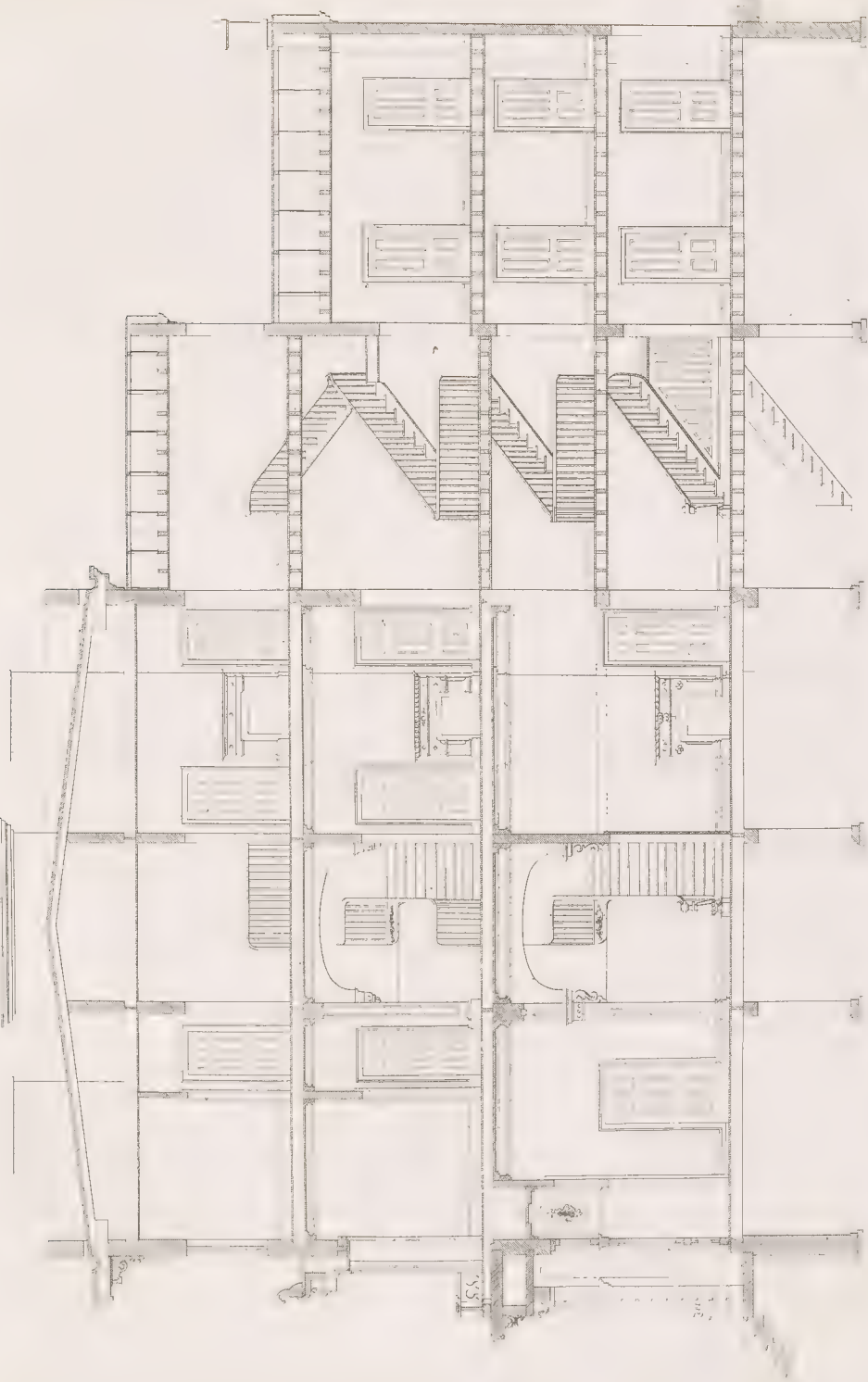
Scale 1/2 inch to one inch.

Sam'l Sloan: Archt.



SECOND STORY.

Sam'l Sloan: Archt.



LONGITUDINAL SECTION.

Scale 3 feet to one inch

Continuing our example, we find that something is required to give the appearance of support to the projecting cornice, and accordingly apply the bracket, which, though so frequently treated as a merely ornamental feature, can thus be shown to have originated in utility. It is curious and pleasing thus to trace the origin of many features, some of which, in the course of time, get so far astray from their primary uses as scarcely to be reconcilable with them; yet there are innumerable smaller forms of decoration that have no foundation in utility, but are the creations of fancy or imitations of nature; from these it is the business of the designer to select, and apply such as may accord with the tone of his composition.

We would not be understood to undervalue anything that may conduce to the tasteful adornment of an edifice, so long as there is no tendency to overstep the limits of correct taste. But we have seen instances which it were impossible for a moderate fancy to understand, much less to appreciate, and at such as these are our remarks pointed. Justice requires us to say, that the taste of our people, though improving, has had much to do in the production of some things which are a stain on American architecture; frequently the architect is almost compelled to yield to the taste of the projector, who admires the quantity of ornament rather than its quality or proper disposition.

The design presented on PLATE 89 is intended to be erected as a distinct dwelling, in the usual mode, but is also suitable for the central projecting portion of a row, such as has been represented on DESIGN XVII., as it is arranged with reference to being built contiguous to others; no difficulty would occur, however, in its adaptation to a corner.

PLATE 90 exhibits the plan. The front entrance opens through an arched vestibule into the hall. Before we proceed further with the description, we would refer the reader to the longitudinal section, PLATE 91, by which the explanation of the plan will be intelligibly understood. Passing under an archway, we enter a hall, which contains an easy flight of stairs, of width commensurate with that of the hall, and extending to the third floor. It has been held as a rule, that stairs should be displayed—that is, placed so as to be seen on entering the house; on the other extreme, it has been averred that there is greater propriety in concealing them altogether from observation; we have sought a medium between these views, by placing them in a hall at rightangles with the entrance, and consider that this arrangement conflicts with neither taste nor convenience. These stairs are intended to be lighted by a sky-light; instead of the plain manner in which we have represented it on the drawing, it may be made in lantern form, and the glass stained, thus enriching the volume of admitted light with blended and enchanting hues; to add further to the effect, the ceiling of this lantern may be blue and spangled with stars, or, otherwise, finely frescoed.

Over the main hall is thrown an elliptical archway, supported on consoles; a feature significant of stability, yet from its height conveying no impression opposed to grace and lightness.

On the right of the entrance-hall is the drawing-room; rear of this is an extension-room, which may be used in connection with the drawing or dining room, as occasion requires. The dining-room is in the rear of the main hall, and entered from it through folding doors.

PLATE 90 intelligibly illustrates the arrangement of the rear portion of the building on the first floor; but for the better explanation of the arrangement of the private stairs, and their connection with those of the main building, attention must be given to the section. The second floor of the rear building is on a level with the half-landing of the principal stairway; by this means a passage from rear to front can be procured over the one represented on the plan of the principal floor, and the second floor of the main building reached by servants without disturbing the inmates of the chamber over the dining-room. This is shown by dotted lines on the section; the space occupied by the passage from the mezzanine to the half-landing, is, on the second and third floors, appropriated to closets. The arrangement of the second floor of main building, and third floor of rear building, is shown on PLATE 90; and that of the floor above may be similar.



DESIGN XX.

A SUBURBAN OR VILLAGE CHURCH.

AMONG the clusters of happy homes that skirt the borders of a great city, remote from the clangor of business, what object is more pleasing to contemplate—half-hid amid the foliage with which nature and art have combined to render the spot more lovely—than the spire-crowned village church? Hitherto in this work we have confined ourselves within the bounds of the close-built city; and now, that we venture to step beyond its limits and catch a glimpse of the face of nature, we feel revived and cheered, and—all-forgetful of the realities with which we have had to do—imagine ourselves once more inhaling the breath of spring, perfumed with odors of nature's own compounding, with a broad landscape, diversified by village, rock, and tree, spread out before us, and the busy, bustling city behind. Somewhere in this imaginary landscape we would place our church, not hemmed in and crowded by contiguous masses of bare brick walls, nor perched on a naked mound, but planted, as it were, among the trees, on the choicest spot the village can afford.

History tells us of the worshiping of the Scottish Covenanters, when pursued by their enemies, in the caves and fastnesses of their native mountains, where the lightning flashed from rock to rock, and the thunder was answered by its own echo, mingled with the voice of prayer and praise; and from the same source we learn that the character of the worshipers assimilated with that of the shrine—it was simple, rigid, grand, and severe. The sullen sublimity of the rocky cave-shrine, the solemn grandeur of the cloud-capped mountain, and the ceaseless turmoil of the troubled ocean,



FRONT ELEVATION.

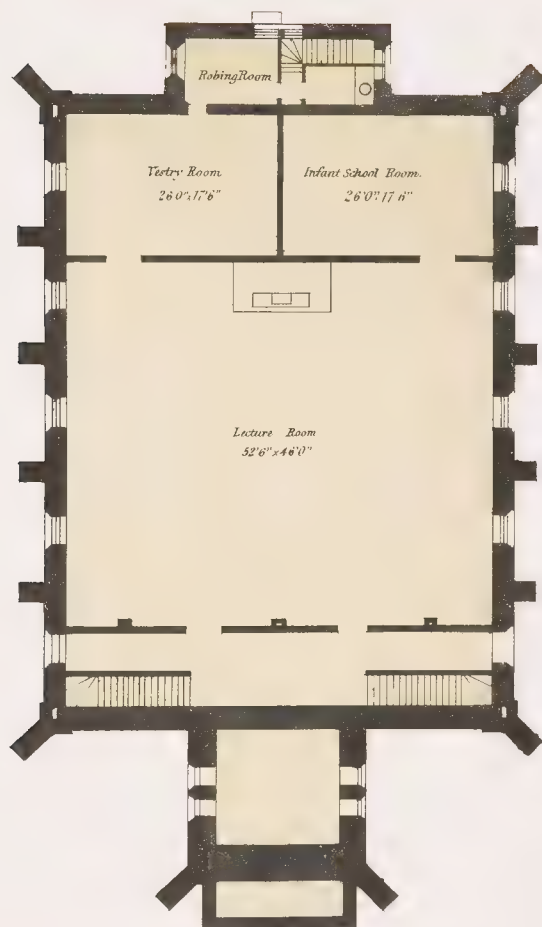
Scale: 1/4 inch to the foot.

J. F. Nason, A. S. T. E.



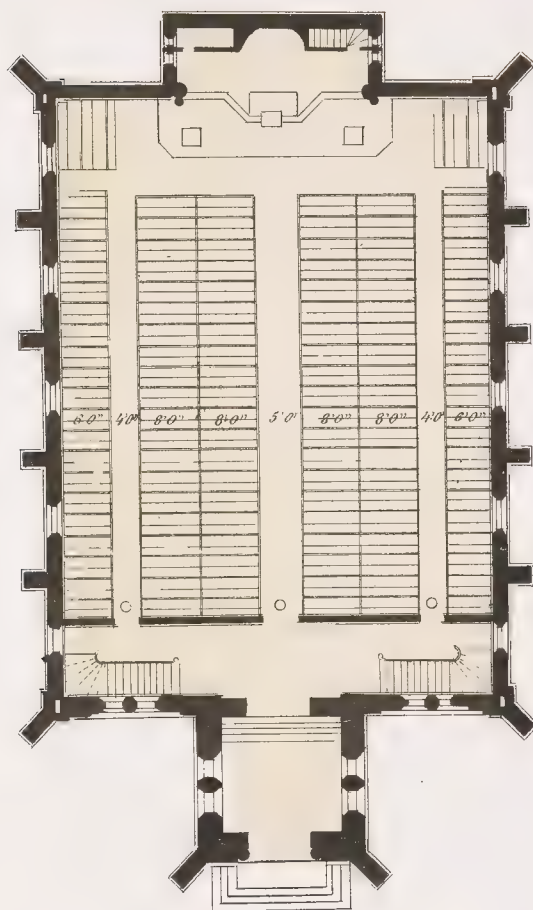
FLANK ELEVATION.

Scale 1/16 inch to one inch



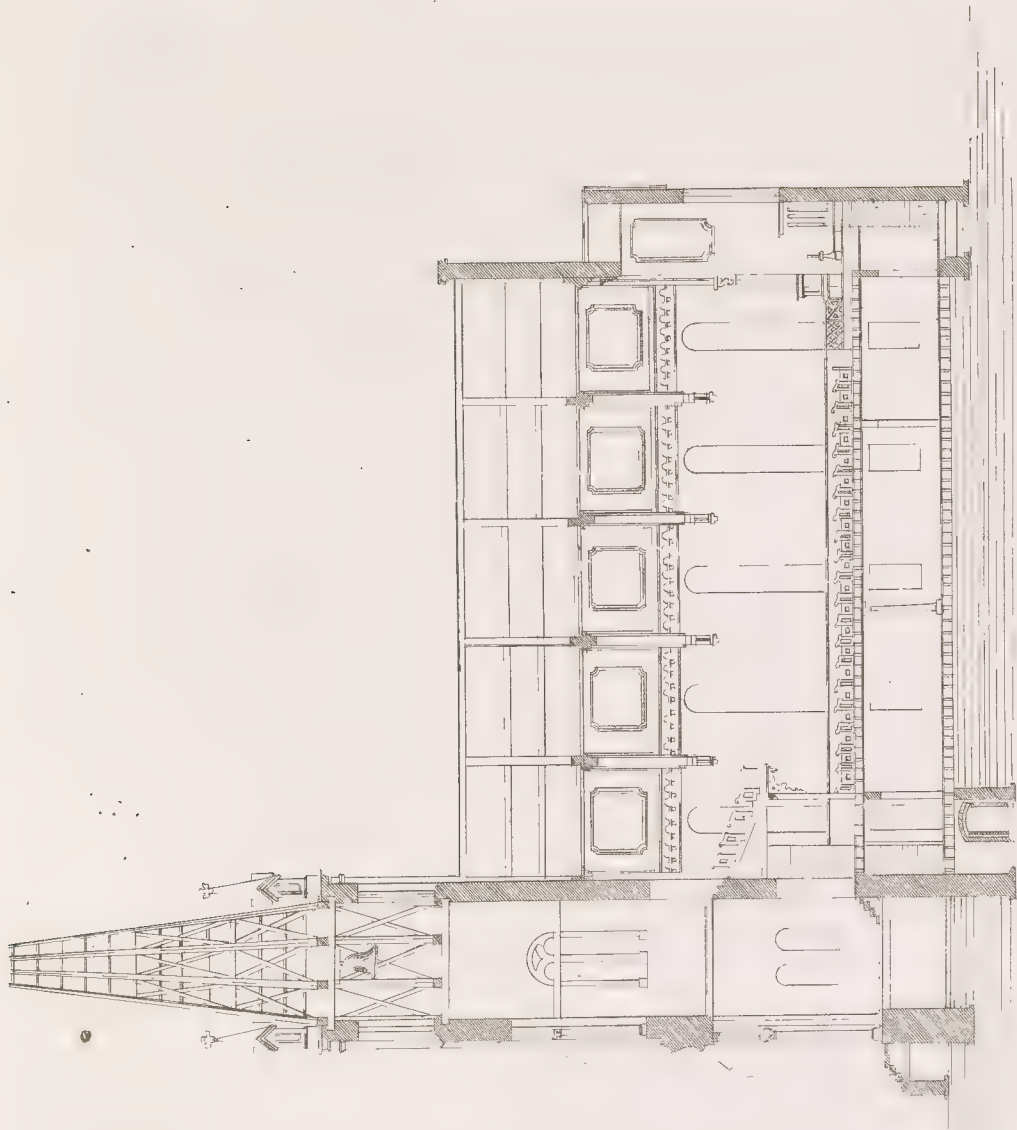
BASEMENT PLAN.

Scale 1/16" = 1 inch



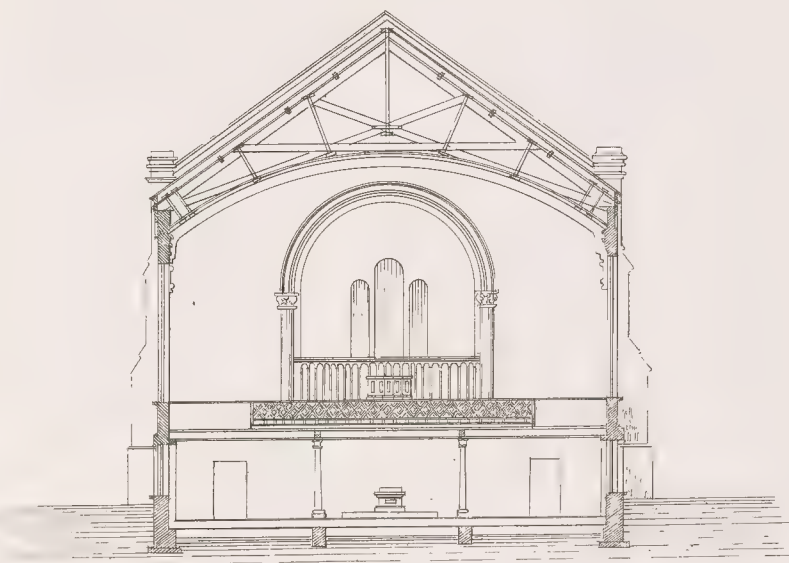
Scale 16 ft to One Inch

PRINCIPAL STORY



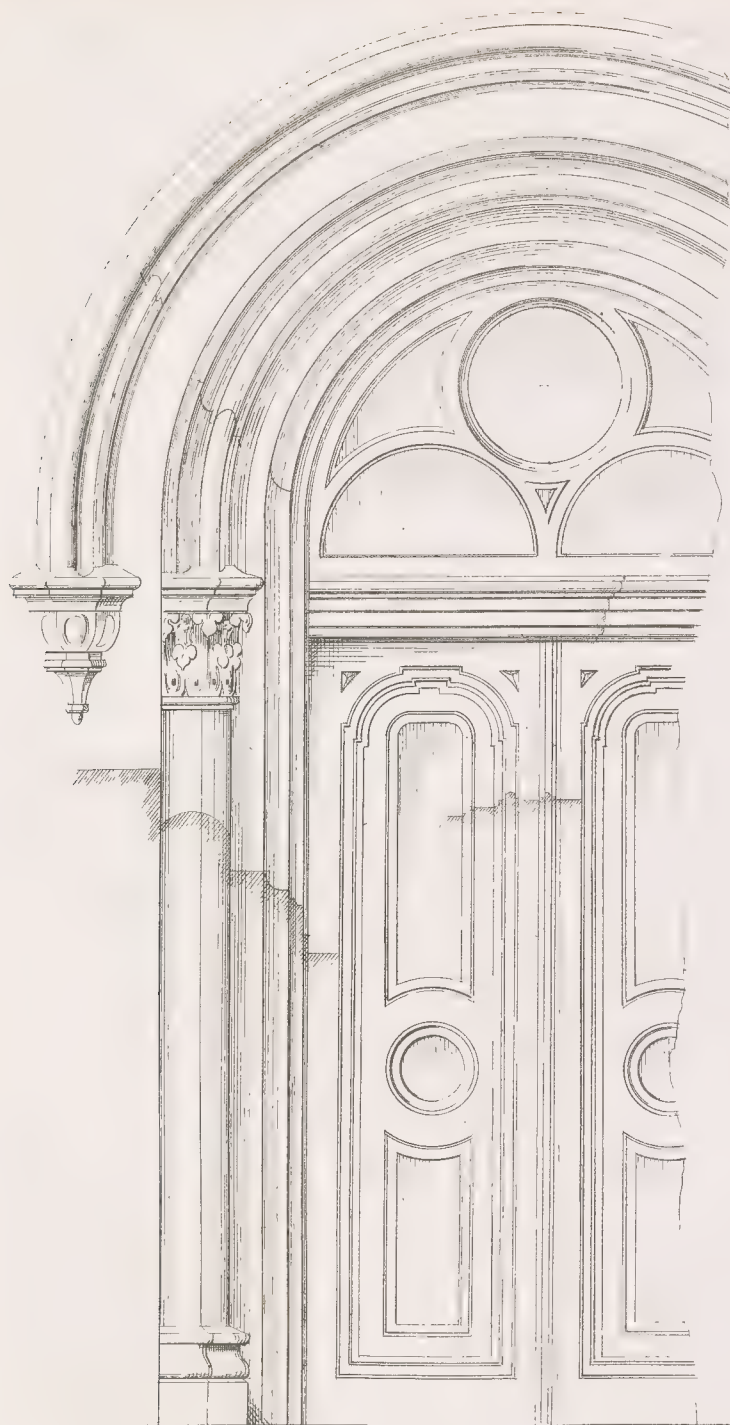
LONGITUDINAL SECTION

Scale 16 ft. to one Inch
1 ft. = 1/16 inch



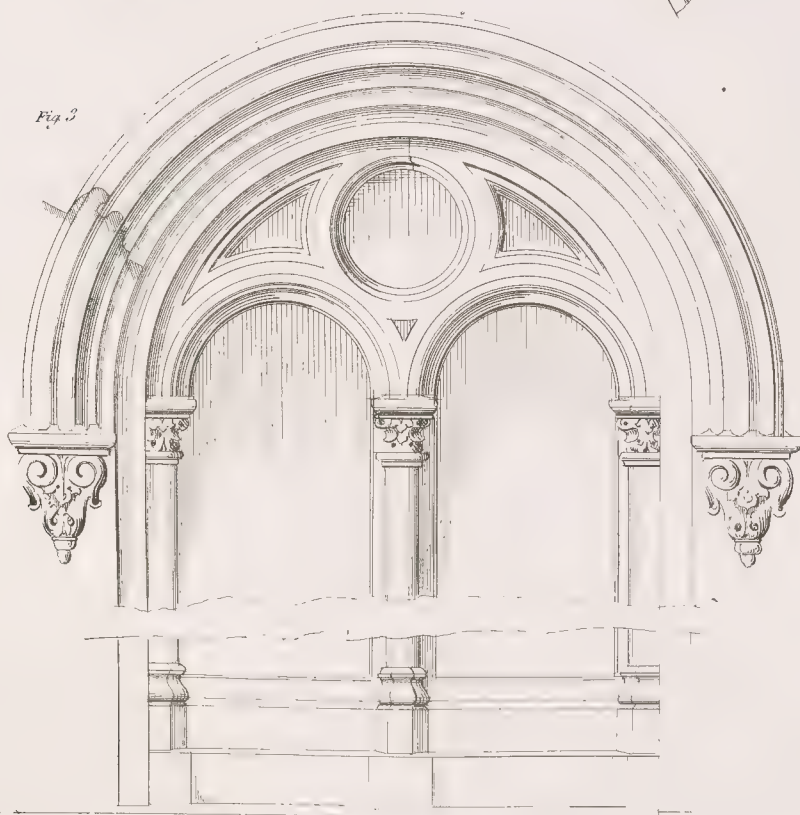
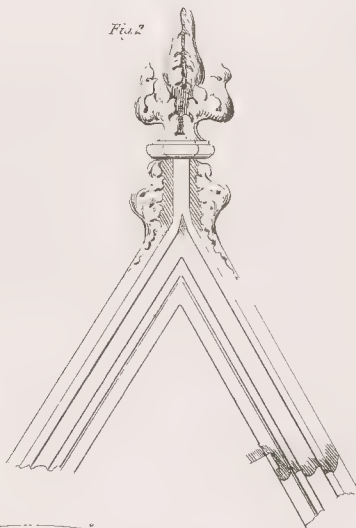
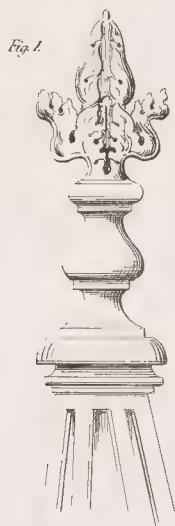
TRANSVERSE SECTION

Scale 16 feet to one inch

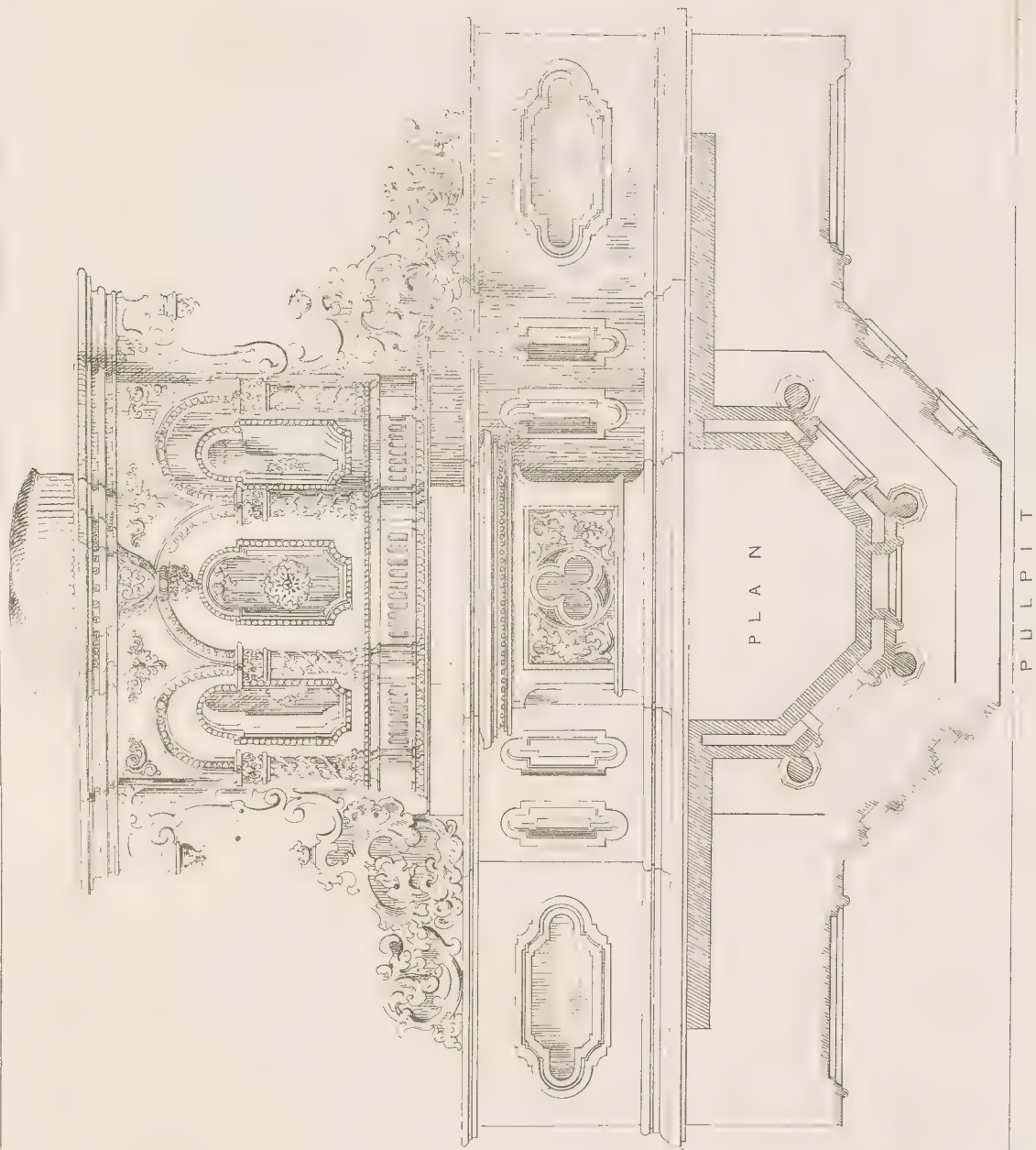


View each to the foot

W. H. R. 1855



Scale half an inch to the foot





ORGAN FRONT.

Scale 4 feet to the inch.

all are calculated to inspire reverence for the Supreme, and are therefore in harmony with the idea of devotion. Less in appearance, but not less in reality, is the rippling stream and the murmuring breeze in concord with the great tribute of praise that day by day ascends to the ear of Heaven; here is a shrine for the peaceful Christian to bow at,—an altar at which may be rendered the dues of man to his Maker.

"The groves were God's first temples."

And if Art affords more convenient means for His service, let Nature still deck them with such surroundings as shall be in keeping with the rites of solemn worship.

We have given our design the unpretending title of village or suburban church, and though not exclusively intended for such, we shall treat of it as best adapted to a large village, or the suburbs of a city. We propose that it should be erected free from contact with surrounding edifices, the front receding some distance from the street, and the ground tastefully adorned with trees. Tastefully, we say, yet not playfully, as we would adorn a place of residence; an eye is to be kept to the purpose of the place and of the building; nothing introduced of a frivolous character, such as diminutive evergreens, or paltry ornamental devices, about the inclosure, but all calculated to give the spot a dignified and solemn air. If trees of spontaneous growth do not exist, transplanted ones will attain sufficient magnitude in a few years; but those rendered venerable by age are to be chosen in preference. This, in many cases, may influence the location of the church, but, of course, must sometimes yield to considerations of greater importance.

The application of the semicircular arch to the principal apertures of this design, with the general character of the decoration, leads us to term the style Norman. It may be erected of brown stone, of which we have before spoken as very appropriate for buildings of this kind; its peculiar cast heightens the effect produced by surrounding foliage, and thus augments the appearance of solemnity. It is to be here remarked, that there is a possibility of having too much shade, and instead of the effect above referred to, the building can thus be invested with an appearance of gloom, that, with the increased growth of foliage, may grow dismal. Hence, the proximity of trees to the building should be governed by the dictates of experience, and a knowledge of the combined result of these natural and artificial agencies when placed in contact with each other. Equal, if not superior, in the effect of its application to this design, would be the Pictou or Acadian freestone, the peculiar tint of which is represented on the given plate.

Combined with the accidental shadows of exterior foliage, the mellowing power of stained glass exerts a pleasing influence on the interior aspect of the church. Let the poet describe the painted window and its effects.

"A casement high and tripled arch there was,
All garlanded with carven imageries
Of fruits, and flowers, and bunches of knot-grass,
All diamonded with panes of quaint device

Innumerable, of stains and splendid dyes,
 As are the tiger-moth's deep damask'd wings;
 And in the midst, 'mong thousand heraldries,
 And twilight saints and dim emblazonings,
 A shielded 'scutcheon blushed with blood of queens and kings.

"Full on this casement shone the wintry moon,
 And threw warm gales on Madeline's fine breast,
 As down she knelt for heaven's grace and boon;
 Rose-bloom fell on her hands, together prest,
 And on her silver cross, pale amethyst:
 And on her hair a glory like a saint;
 She seemed a splendid angel, newly drest,
 Save wings, for heaven."

But to our description. By a perusal of PLATE 93, it will be observed that there is a gentle descent of the ground toward the rear; if the site is naturally devoid of this peculiarity, it may be formed artificially, otherwise the excavation of a side area of a few feet in width will be rendered necessary. But little explanation is required to render the drawings intelligible. On PLATE 94 is shown the basement plan; entering from side doors we pass through a vestibule into the lecture-room, beyond which is a vestry and an infant school room. The portion corresponding to the chancel recess in the audience-room, is on this story occupied by a robing-room and a flight of stairs ascending to the pulpit. In the vestibule, above referred to, are two flights of stairs leading to the principal floor. On PLATE 95 we have given a plan of the audience-room. The outer vestibule, formed by the tower, is entered by a flight of five steps from the ground, and five more are required to reach the main vestibule, through which we enter the audience-room. Over this vestibule is a gallery approached by two flights of stairs; the central portion of this gallery is intended to be occupied by the organ and choir.

The audience-room is of fine proportions; the ceiling is arched and the ribs moulded. The panels of the ceiling should be painted in fresco, of chaste design and color, and the ribs grained in imitation of oak. The pulpit, organ-case, and pews may very appropriately be of oak.

We have thus endeavored to give a clear idea of what DESIGN XX. is intended to be. We have represented the exterior by geometrical drawings, and by the description and accompanying illustration we imagine the interior will be readily comprehended.

PLATE 96. Longitudinal section.

PLATE 97. Transverse section.

PLATE 98. Elevation of front entrance.

PLATE 99. Fig. 1, finial of spire; Fig. 2, gable crocket; Fig. 3, front window of tower.

PLATE 100. Details of pulpit.

PLATE 101. Organ front.

DESIGN XXI.

A BANK BUILDING.

ABSTRACTLY considered, it is more satisfactory that a building devoted to the purpose of banking should be adapted specifically to that end. Having already exhibited a plan for a banking institution, in connection with apartments for inferior purposes, we now propose, in DESIGN XXI, a structure detached from other buildings, containing a provision of rooms suitable to the various demands of a banking corporation, and arranged with a view to enhancing as much as possible the orderly and convenient dispatch of business. It was designed, primarily, rather for a town than a city, with reference to the accommodation of a moderate, well-conducted business, and is an example of that class of buildings which, without any pretensions to great or striking effects, has a stern and almost fortress-like expression of strength, sufficiently suggestive of the idea of security, which, in view of its intended function, cannot be reckoned inappropriate. The style is Italian, and bears the Florentine stamp.

The principal floor is elevated considerably from the level of the pavement; the apartment for public business is entered through an octagonal vestibule. The intended position of the counter is indicated by lines on the plan. A fire-proof is provided rear of the banking-room, for the preservation of the valuable property necessarily involved in the concern. On one side of the fire-proof is a passage leading to the cashier's office, and on the other are two archways, through which, from the banking-room, we enter a lobby; this lobby is a thoroughfare not only for customers who have business with the president, but for all who pass to the basement or second floor. On the basement plan is shown the position of the furnaces by which the building is intended to be warmed, a wash-room, and the foundation of the fire-proof. The story of the banking-room is of considerable altitude, as it is intended to occupy the full height of the building, and the ceiling may be either domed or flat; the former is preferable. The height of that portion of the building rear of the banking-room is divided into two parts; on the mezzanine floor is the directors' and watchman's room. A small room, marked storing-room on the drawing, may be used for miscellaneous purposes.

It will be observed that the fire-proof is isolated from any of the exterior walls; this tends to the greater security of its contents. Nor should the floors, or any part of the wooden con-

struction be so connected with the walls of the fire-proof as to disintegrate them in the event of a conflagration.

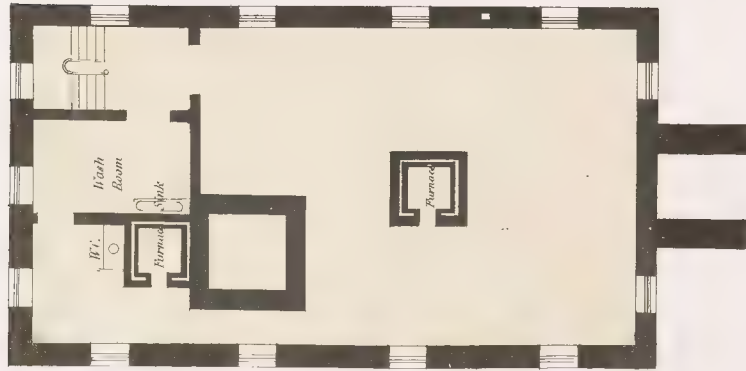
Too great attention cannot be paid to making every part secure, as a bank is a tempting bait to the pick of a burglar; every part ought to be constructed as carefully as a prison or fortress. The instinct of minor animals can be governed by an appearance of strength; but it requires great caution to circumvent the cunning of the human intellect, when, combined with a spirit of adventurous daring, it goes in quest of forbidden treasure. From the foundation to the roof no point should be left defective: the lynx-eyed robber can only be foiled by real solidity; a sham is not sufficient. The exterior walls of this building are intended to be faced with stone ashlar.

We shall conclude this article with an extract from a letter, written in 1695, by Sir H. Shere, to Lord Nottingham, on the subject of a residence his lordship was about to build—giving his views on the construction of brick walls.

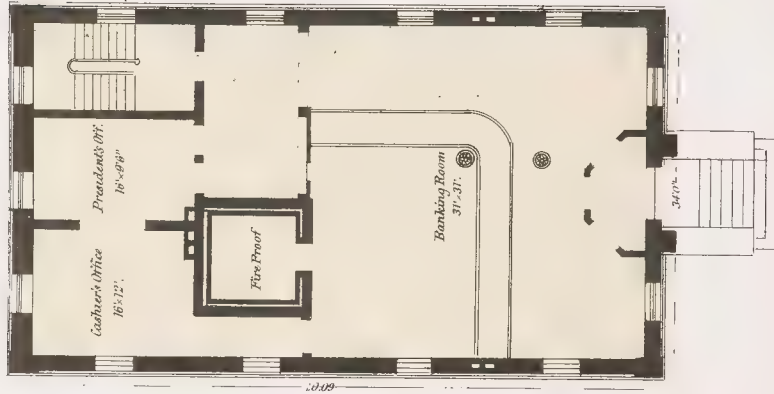
"You tell me, my lord, you purpose this house entirely of stone, which I am sorry for, having, I think, very good reason to prefer brick to any other material whatsoever; I mean for the case or carcase of the building, not refusing any ornament or clothing of stone you may be supposed to give it. My grounds for this opinion are, first, from observation, that all works wrought in brick are more durable than in stone, the greater edifices and monuments of antiquity now in the world being of that material; and, not to multiply instances of the truth of this remark, I take notice that the Pantheon at Rome, built by Agrippa, in the first century, continues to this day perfect in all its strength, and certainly without the least appearance of defect or decay. The walls of this structure are twenty feet thick; the core or solid part thereof is brick, and covered only with a shell of marble, whereof the ornaments are composed. Now, if I am asked a reason for this superior strength and durability of works in brick, I answer, first, the mortar—a cement which is the virgula that binds and holds the parts together—is allowed to be harder and more pure in works of brick than of any other material; and forasmuch as the decay of all buildings takes beginning at the mortar or cement, which is the least durable part, it follows that where that is hardest and most durable the building must be most lasting, and longer endures the weather and the assaults of time. Now I say, that as the cement in brick-work rests better and is harder than in stone, being found in fact to corrode; the reason of which I will endeavor to give you, which I take to be this, namely, that bricks, as everything doth that is made by fire, acquire a warmth by that element, that does not presently forsake it; which adventitious heat, too, partaking with the petrifying quality of the mortar, bakes and hardens it to a greater perfection than in stone, and so begets a finer and more durable consistency of the mass. Furthermore, brick hath the advantage of stone in point of figure, being cast and finished in such a fashion by art, both for length, breadth, and thickness, as consists with that bandage and union which is necessary to all works that are to be made into a mass, and compiled out of divers and lesser parts whereof the whole is to be composed. Bricks are likewise formed straight, flat, and with rightangles, which



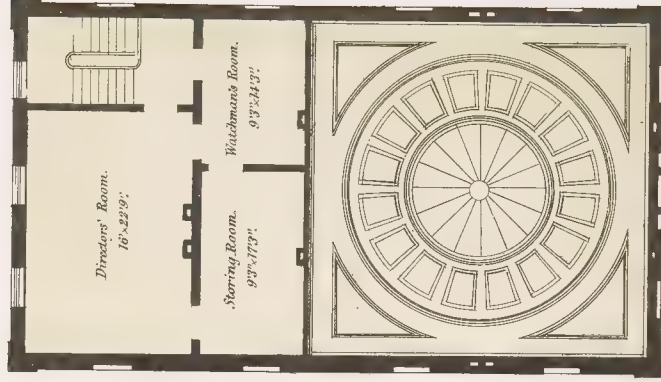
FRONT ELEVATION.



BASEMENT PLAN.



PRINCIPAL FLOOR.



SECOND STORY.

Sam'l Stearns Archt.

Scale 1/2" = 1'.

J.F. Watson & Co. Phila. Pa.

gives them an easy and firm seat one upon another, by which means they will rest and stand fair on their bases, without the help of cement."

"I am not against carrying up a great building with stone to the top of the ground, but from thence upward I would by all means build with brick. The Italians work their brick-work always wet, their mortar being much more liquid than ours, which makes much better work, thereby having smaller joints, driving down every brick with the handle of their trowel, till in some part or other it touches the brick under it. The best way of preparing mortar in the world is what I have already imparted to you; but it is very hard to put workmen out of their road."

DESIGN XXII.

A PUBLIC SCHOOL EDIFICE.

AMONG the many agencies tending to the upward progress of learning among the masses, that of the provision of suitable school-rooms holds a high rank. Next to incompetent tutors, nothing is more calculated to dampen the ardor of the youthful aspirant or clog the wheels of his advancement, than to be cramped and confined in some of those dens, of which, we are sorry to say, far too many yet exist, and which, with thousands of others, we will have occasion to remember while life lasts. Among other poignant recollections of our school days, is that of a keen volume of north wind pouring through open crevices and broken windows. Ventilation is desirable, but this is ventilation almost beyond endurance, and, so far from preserving health, tends to destroy it by colds and fevers. Again, there are those school-rooms from which a jet of fresh air is as carefully excluded as if the consequences were certain ruin; here an over-anxiety to shut out discomfort begets and fosters disease of a character that medical remedies can seldom reach. How many, under such influences, contract affections of the respiratory organs, tending to shorten their existence, is beyond the reckoning of statistical records. The statistician does not note the multiform shapes of lingering misery engendered in the school-room, which clings with a relentless hold to the vitals of the living thousands, who, unconsciously, and without blame to themselves, have suffered the seeds of disease to be sown on the tender soil of childhood.

We have been induced to make these remarks from a personal observation of a number of the school-houses that are permitted to stand in many towns and districts, to the disgrace of the inhabitants. Excited by the fatal consequences inseparable from the negligent course pursued by those having the management of some of the school departments, we cannot but comment upon it,

and if by so doing we awaken inquiry or institute research on this important subject, and thereby assist in the preservation of the boon of health to the rising myriads in pursuit of elementary knowledge, we shall feel amply repaid. Not only would we protect our tender charge from the storm, but we would furnish him with air that he can breathe freely, and at the same time withdraw from his presence a poison that, if not rapidly, will nevertheless surely undermine the healthiest organization.

When buildings are erected on a large scale (as proposed by the accompanying drawings) for the accommodation of several schools, nothing is more culpable than defective construction. The occurrence of fatal accidents, occasioned by faults of this kind, frequently startle us with their shocking details. A sudden alarm of fire, whether true or false, strikes a panic into the hearts of a mass of children; reason yields to an instinctive fear of destruction, and a rush for the stairway is made; if this is narrow, or in any way defective, and the number of children great, the consequences are always more or less fatal. Now, in the first place, we would endeavor to guard against a real danger of fire, and the possibility of such an alarm being given—of course, much here depends on those having the immediate government of the pupils; and next, would provide substantial and ample means of egress, which, though apparently unnecessary under ordinary circumstances, in the event of accidents of the above nature would prove eminently serviceable. This is attainable by making all passages commodious, the stairways wide, and provided with strong hand-rail and balusters.

Happily, an interest in the perfection of our school building is spreading, and bids fair to become universal. The guardians of our children's education are waking to a sense of the prevalent evils arising from the imperfect system of educational provision that has existed, and slowly, but we hope surely, is a brighter day coming, to lighten, in a great measure, the toils, the headaches, and heartaches of pupilage. Let the schools of Philadelphia testify, as they abundantly can, to the revolution that has been taking place. Seats and desks, whose practicability were in former times measured by their cost, have been discarded for others, in which the comfort and health of the pupil is the first consideration. Medical and optical science has been consulted for the most judicious methods for the admission and distribution of light; and a proportionate care has been exercised, to a great extent, in the provision of all the necessary appendages for the completion of the system.

The design represented in perspective on PLATE 104, the front of which is shown by a geometrical elevation on PLATE 105, is proposed for the exterior of a school building suitable for a large town, and for the accommodation of the several divisions of a graded school; it may also be applied with propriety to the purposes of a town-hall or library. In any case its location may very properly be in an open square, and we venture to affirm that, placed in a central portion of one of the thriving towns of which our country exhibits so many examples, its appearance would reflect no discredit on the taste of the inhabitants.

It is more particularly designed for school purposes. Though unaccompanied by any ground-plans illustrative of its interior arrangements, we may give a general idea of its applicability by a



PERSPECTIVE VIEW.



FRONT ELEVATION.

Scale 16 feet to the inch.

J F Watson's Lith. Phila.

brief description. The building is eighty-two feet in length on front, and intended to extend back to the depth of sixty-six feet, and is four stories in height. A vestibule, containing two ample flights of stairs, occupies the front portion of the building, and on the basement extends the whole length; on the remaining stories a room is formed at each end for the reception of the out-door clothing not required in session hours. From this vestibule a hall of ten feet in width extends to the rear of the building, dividing it into two equal portions, which, for school-rooms, may again be subdivided. The basement, however, is not intended for school-rooms; one side of the building will make a fine lecture-room; one-half of the other side may be devoted to the use of the Directors, and the remaining half appropriated to miscellaneous purposes, as the storing of fuel, for which, from its contiguity to the proposed position of the heating apparatus, it will be found particularly convenient. The hall on the basement may be shut off from the other apartments, except the last named, for the purpose of applying proper means for the warming of the whole interior of the building. Of the many modes now before the public, none is more applicable to school-rooms than the hot-water furnace, hereafter described, as the heat generated by it, or rather the heated air evolved from it, is free from those scorched particles so deleterious to healthy breathing.

It may be here remarked, that the prevalent practice is to introduce the hot air at the bottom of apartments, and leave the opening for the ventilator immediately below the ceiling. Of late years, the subject of heating and ventilation has become one of general interest and importance. As might be expected, numerous theories have been advanced, and considerable diversity of opinion exists in regard to the best method. Some hold that the ventilators should be placed both above and below in apartments; while others as positively assert that they should never be placed at more than one point. Our own opinion, founded on years of practical experience, during which we have given the subject much and earnest attention, is, that it matters little where the air is admitted, so long as a pure and constant stream is supplied, and a proper outlet—the position of which is but of trivial importance—afforded for the escape of that which becomes vitiated. The outlet should exceed the inlet in capacity, in order to insure easy egress to the deleterious air, and should always be placed on the opposite side of an apartment. The introduction of artificial means, such as a fan, and a coil of hot water or steam-pipe, placed within a chamber in the loft, is always desirable, where at all practicable, as by these the constant circulation of a current of fresh air is essentially promoted, and the vitiated air, at the same time, effectually drawn forth and excluded.

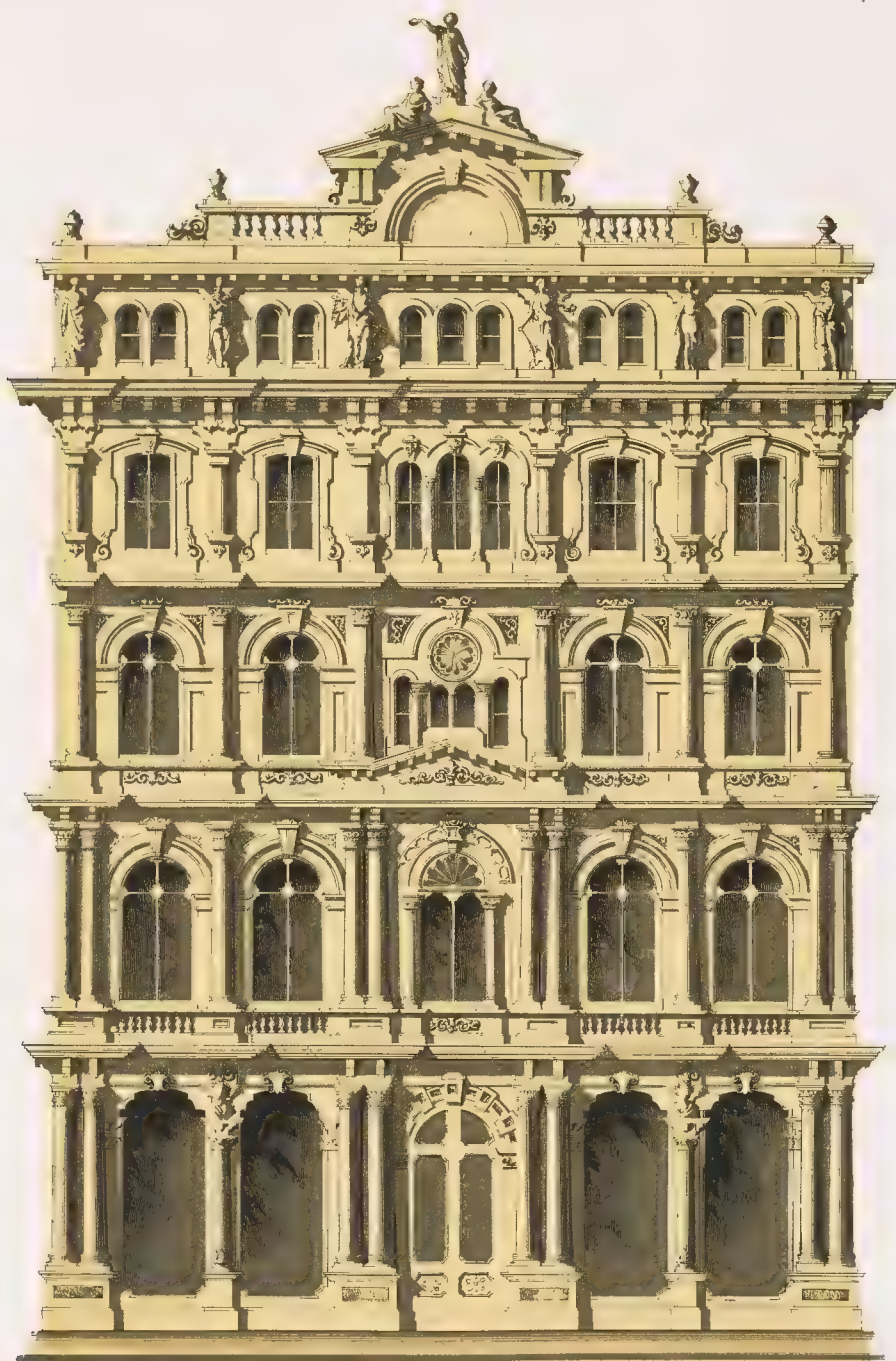
This structure was designed with a view to the use of brick in its erection. All the corbels, window-heads, and the rustication of the basement, can be readily formed of brick; while the cupola, main doorway, and cornice may be wood; and the window-sills, tablet, base-course, and entrance-steps, stone. We may also remark, that stone should be given the preference for the cornice of the stylobate and the decoration of the main entrance.

DESIGN XXIII.

A FIRST-CLASS STORE-FRONT.

RENAISSANCE is a term employed by some writers, and now generally understood, to denote the revival of architecture and the arts in general, about the period of the decline of the Gothic system. The Gothic style had never been fully developed in Italy; hence, the revival of the classic styles was accomplished with less difficulty and with greater success than in those countries where Gothic had become more permanently established; and although even in Italy the latter style does not seem to have disappeared immediately—for we find in numerous productions of that period an admixture of the two—still, the struggle was not so great, nor so pertinaciously maintained, as in other countries. In Italy, the classic principles were promptly introduced into the constructive and essential parts of the building, and the Gothic suffered to remain only in the form of details: in other places an opposite practice was pursued; the change was gradually accomplished by first introducing classic details on buildings essentially Gothic, until finally the former predominated in every particular. The peculiarities induced by the different courses through which the Renaissance gained the ascendancy, has given it distinctive prefixes derived from the name of the country in which certain characteristics prevail, which are either not so prominently developed, or do not exist at all in the Renaissance of other countries.

DESIGN XXIII. is in the French Renaissance style. It is intended for the front of a first-class store, and to be executed in Pictou, or stone of a similar color. This composition is of a more elevated type than is ordinarily observable in mercantile buildings, contrasting well with their usual cumbrous aspect; it wears perhaps as much of an appearance of lively warmth and gayety of expression as is admissible in a structure devoted to the purposes of traffic. Yet if we are not permitted to vary the character of street buildings by the introduction of something beyond the ordinary piles of brick, stone, and mortar, that rear their fronts in almost continuous sameness along many of our thoroughfares, we must be enduringly chargeable with indifference to the demands of cultivated taste. All mankind are more or less susceptible of being influenced by appearances; every person of intelligence is aware of the power of a pleasing address in the various circles of society. A refined palate is disgusted at the offer of the most delicious morsel if presented on an unbecoming dish, but a less fastidious appetite cannot be offended with the most elegant entertainment. That which may suit the ignorant and uneducated, often offends the refined taste; that which is sufficient to attract and please the intelligent, has a more extensive



FRONT ELEVATION

Scale 8 feet to an inch

influence on the inferior mind. Hence, if the attention of the intelligent and influential can be arrested, the masses are always found turning their eyes in the same direction.

The primary intention in the designing of the front here shown, was to give it a fitting expression for a place of extensive traffic in the lighter and more costly articles of merchandise; its applicability to both wholesale and retail trade being dependent entirely on the interior arrangement.

We have sought to unite strength with an appearance of lightness, without a tendency to unbecoming frivolity; while we have introduced a variety of features in the several stories, we have strictly aimed to prevent the appearance of a discordant part. A combination of the columnar and fenestral systems enables us more effectually to do this than any other method in practice; the development of the three-quarter columns on the face of the piers gives a richness of effect unknown in astylar architecture.

A store-front, or, in the English phrase, a shop-front, from the requirements of the business, demands an arrangement for making all the display of the contents of the interior that the given space will permit; hence, in the arrangement of the lower stories we have been almost obliged to pursue the usual course of superimposition of weight on lightness; that is to say, the dimensions of the piers gradually increase from the first story to the upper one, as the necessity for extended openings diminishes. Nothing is more offensive to good taste than the appearance of numerous fronts within our knowledge, in which a heavy mass of superincumbent wall depends for its support on slender iron piers; the contemplation of it is really painful, notwithstanding the frequent absolute necessity of the arrangement, and the constant assurance of our judgment, that the supporting agency, though so apparently fragile, is sufficient for the performance of its office. It has, therefore, been our care to avoid this disagreeable tendency to apparent weakness, in the present design.

Scarcely secondary in point of ready adaptation, and possibly in better harmony with its architectural character, would be the application of this design to the front of a hotel building. It would be advisable, in this case, to give the principal floor a more considerable elevation from the street, and slightly diminish both the vertical and horizontal dimensions of the windows in the first story; and we may also remark, that for a hotel the execution of this front in marble would be productive of a very superior effect.

But we would not particularly circumscribe its application to the above uses. Erected at the intersection of streets, the lower story could be occupied for a store-room; while an entrance from the side street and an ample flight of stairs would give access to the second floor; this, by the entire omission of the third floor, becomes at once a hall of spacious dimensions, appropriate for an extensive variety of purposes. Such halls are more or less in requisition in every town and city of note throughout the Union, and no objection can be urged against their having an attractive exterior. A gallery may be extended across the front, between the second and third tiers of windows, which, while it causes but a trifling diminution from the apparent spaciousness, will greatly augment the real capacity of the room. The fourth and fifth stories may be used for the meetings of various associations, of which a greater or less number are organized in every

principal town. The idea may be advanced that the erection of such a design is unnecessarily expensive, and the decoration with statuary superfluous; to this we will only answer, that these are the objections which have been opposed to all improvements in architecture that have been suggested from time immemorial, and, if allowed to carry, would check all progress. We have offered this, to communicate, as it were, in a nutshell, an idea of the magnificence that may be attained in the embellishment of a great city, of which the capital of *la belle France* furnishes the most interesting example.

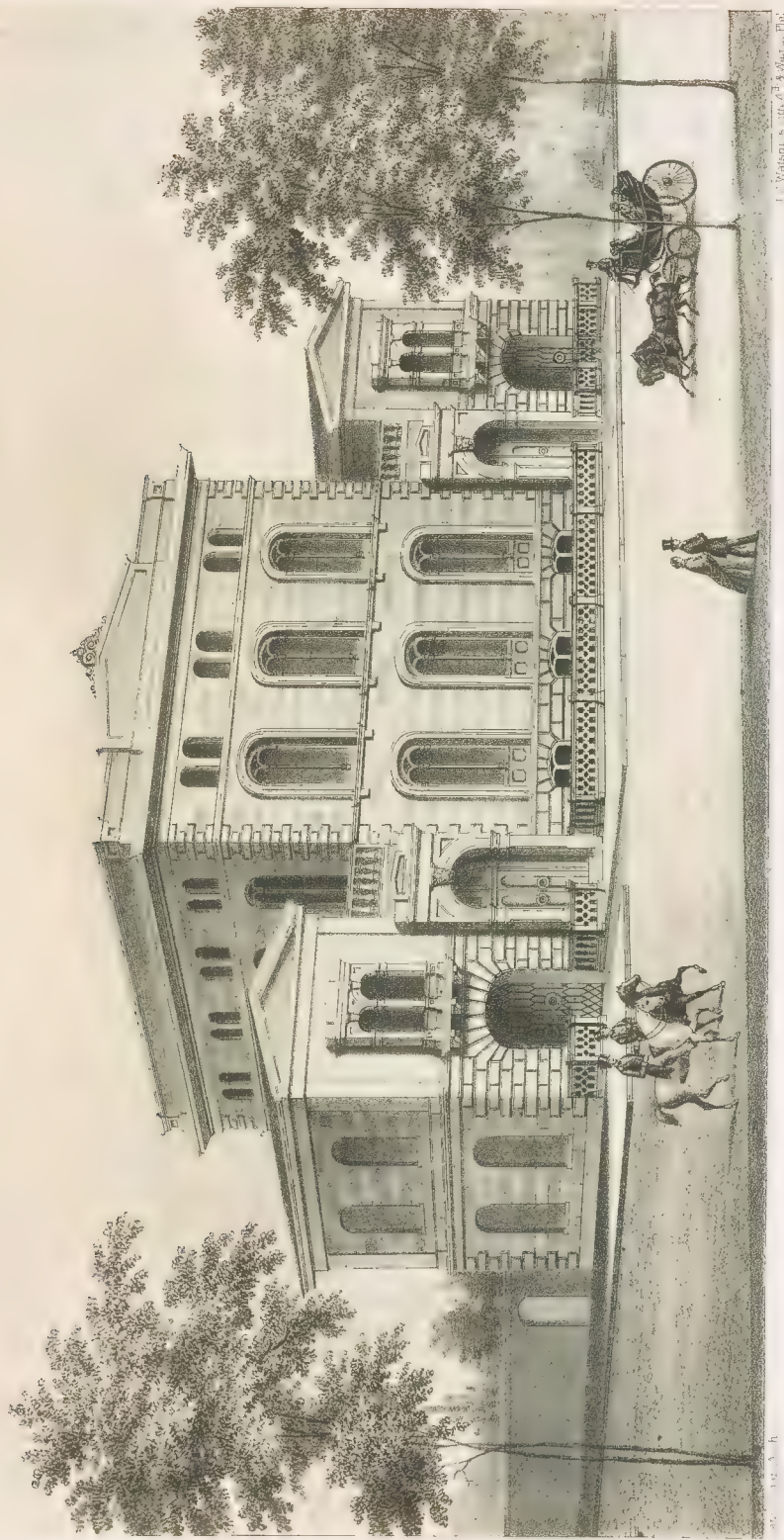


DESIGN XXIV.

A SUBURBAN MANSION.

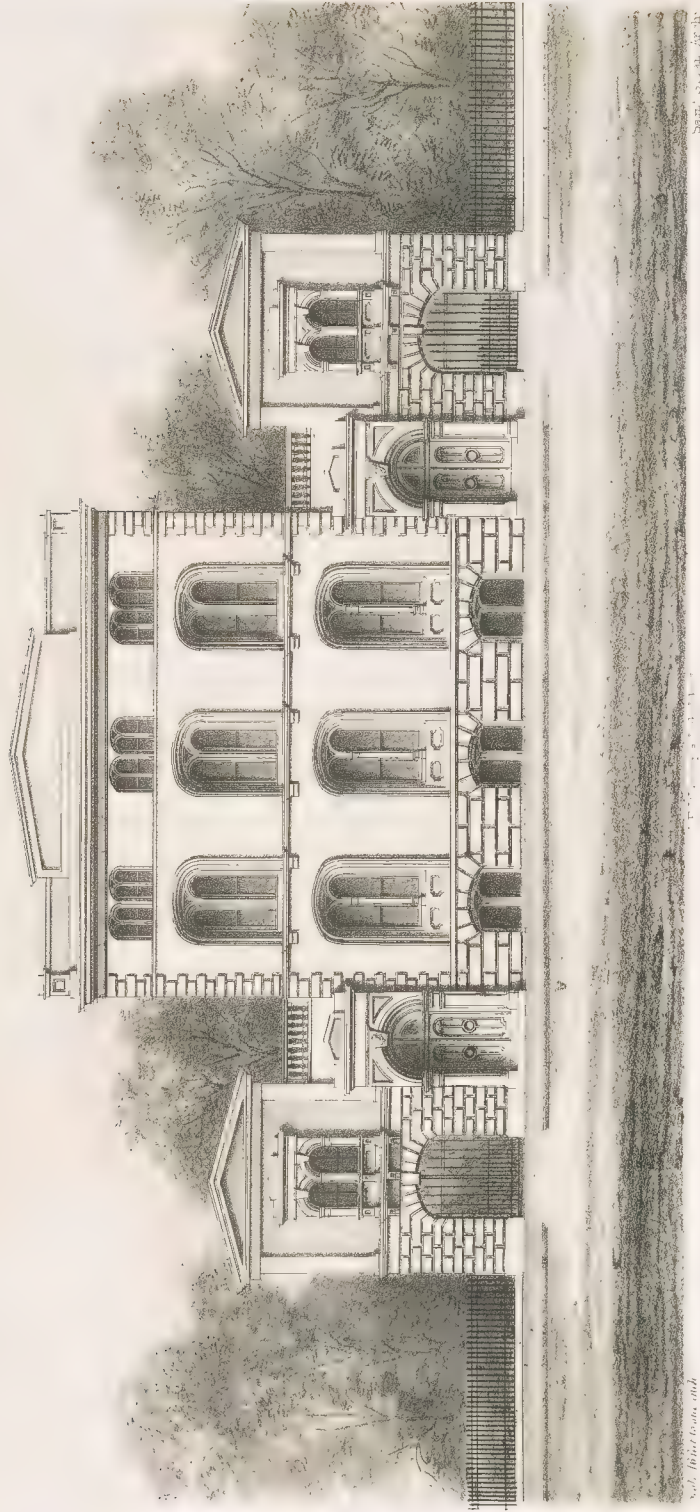
NATURALLY enough, after years of toil through the vicissitudes of business, the man of wealth seeks the enjoyment of comparative quiet; yet his mind, from having been long accustomed to the throng and incessant activity of the city, desires not the settled repose of country life, but is inclined to choose a suburban location. Here, all the conveniences to which he has been accustomed can be readily procured; and here, undisturbed by the discord of a thousand rumbling wheels, he can hear the merry chimes that his boyhood heard—enjoying an equilibrium between the stirring influences of a whirlwind of business and the slumber-inviting calm of a rural atmosphere. He seeks not the selfish seclusion of solitude, but provides for the reception and entertainment of his friends, and the enjoyment of such social and domestic pleasures as may be compatible with his particular circumstances; and his children are provided with such means of instruction and amusement as combine to render home the most attractive spot on earth.

Illustrative of the manner in which this may be accomplished, we exhibit DESIGN XXIV., a suburban mansion in the Italian style, of which PLATE 107 is a perspective view. It is of recent erection, and fronts on a principal square in the western section of the city—a location which eminently accords with the style of the building. Its peculiar expression of independence and completeness in itself demands an amplitude of space, and repels the idea of placing it in contact with other erections; hence, influenced by its general applicability, rather than by a specific instance, we have termed the design suburban. Particularly is its symmetrical and chaste character in harmony with regular and cultivated scenery, rather than with an uneven and picturesque prospect; it should be located on a spot “shaven by the scythe and leveled by the

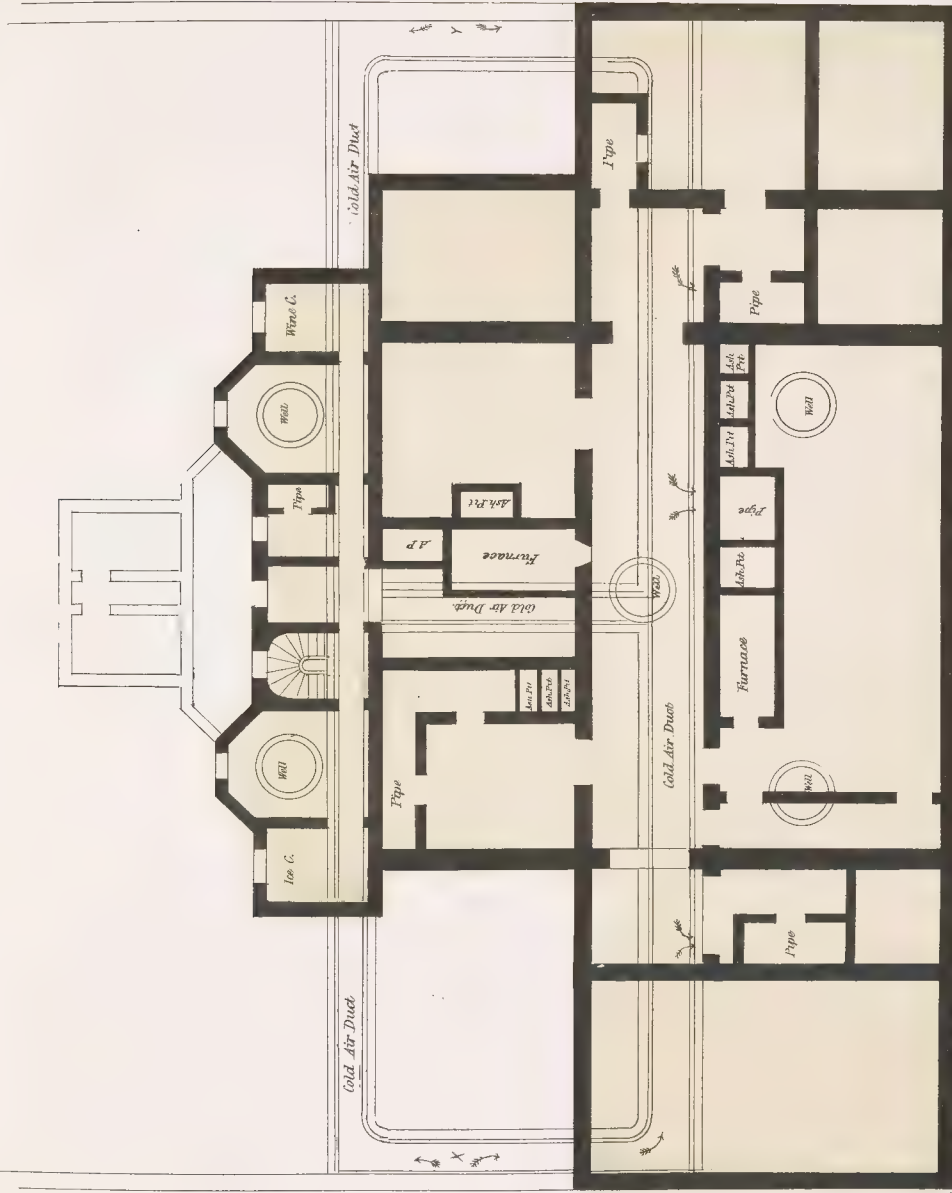


RESIDENCE OF JOSEPH HARRISON ESQ. RITTENHOUSE SQUARE, PHILA.

J. Watson sculp. & del. Phila.



FRONT ELEVATION



Scale 12 feet to one inch.

CELLAR PLAN.



BASEMENT PLAN.

Scale 12 feet to one inch.

Sam Sloan Arch^t

J.F. Watson, L.S.M.



PRINCIPAL FLOOR.

Scale of 1/2 inch to one foot.

J. F. Watson, Archt. Phila.

J. F. Watson, Archt. Phila.



SECOND STORY PLAN.

Scale 12 feet to one inch.

Sam. Sloan Archt.

J.P. Watson's Lib. Phila.

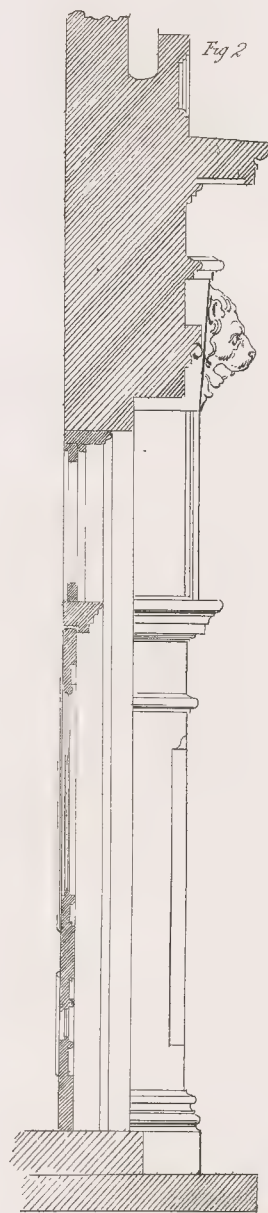
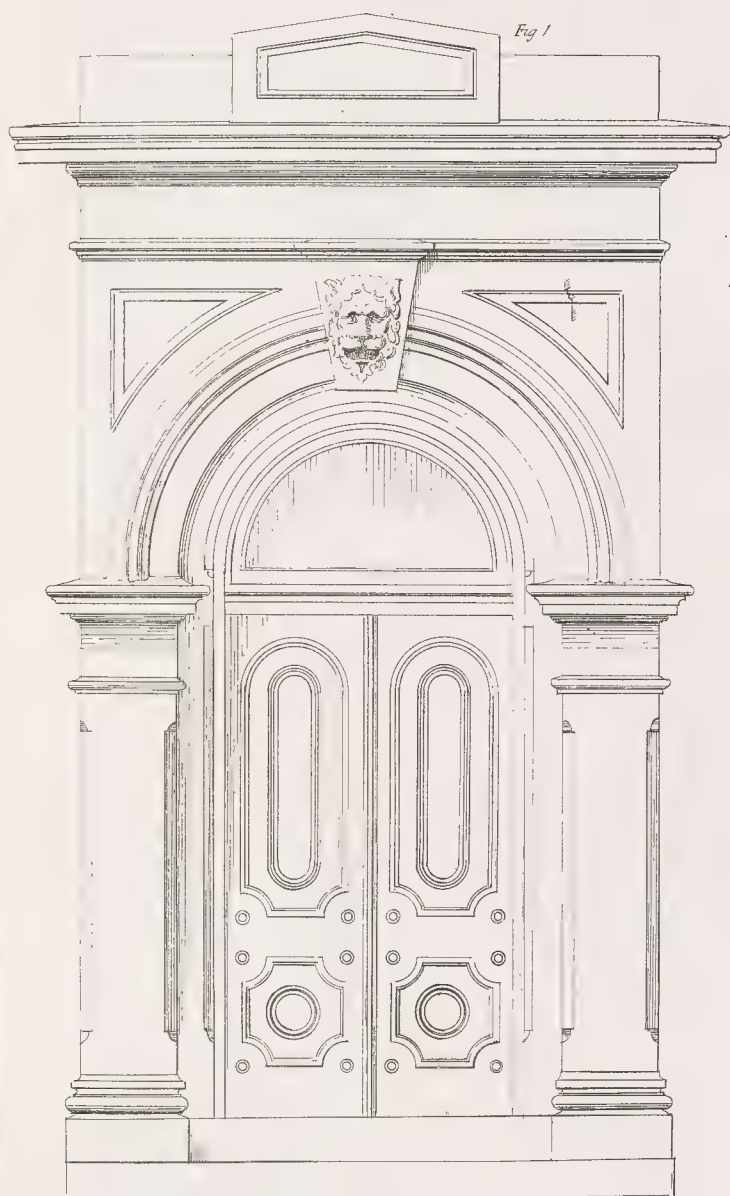


THIRD STORY.

Scale 12 feet to the inch.

Saml Sloan Archt

J. E. Watson's Lith. Phila.



Scale, $\frac{1}{8}$ of an inch to the foot

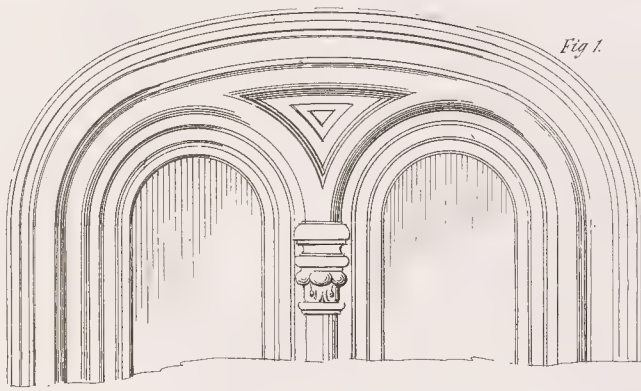


Fig. 1.

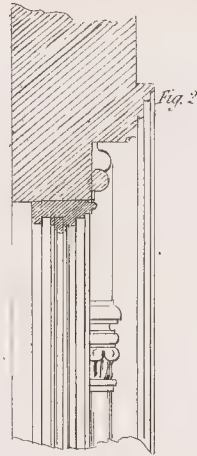


Fig. 2.

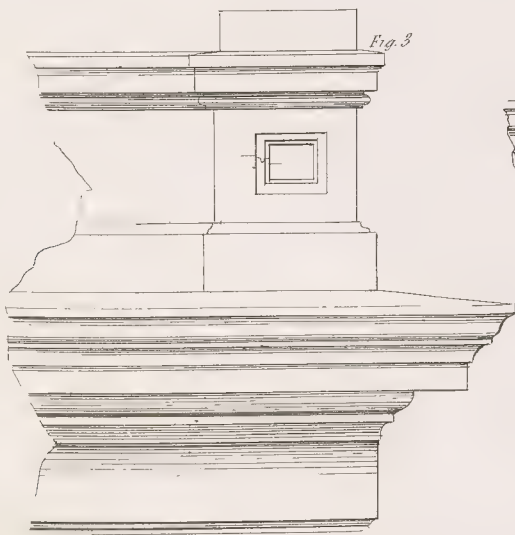
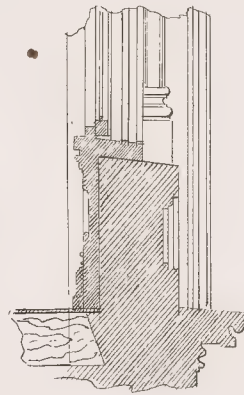
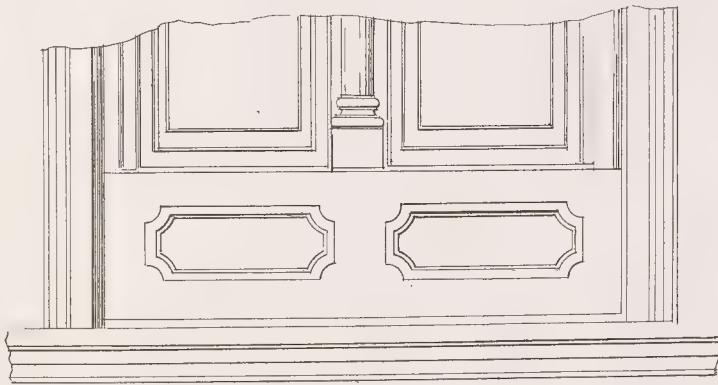


Fig. 3.

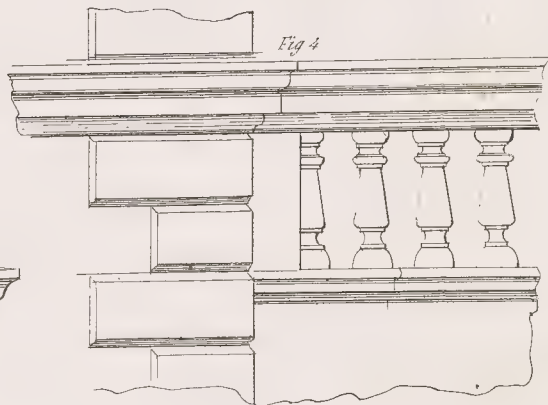
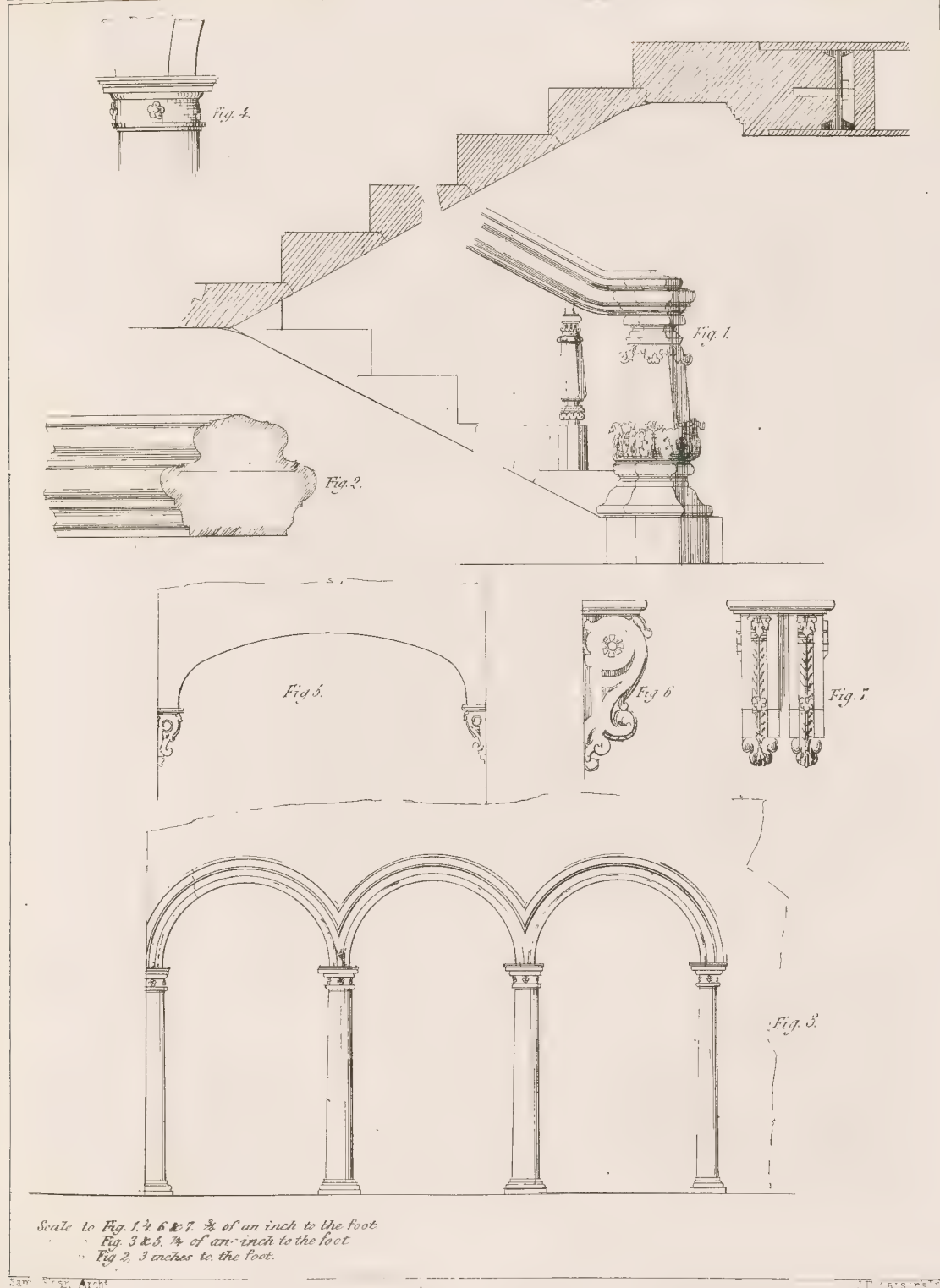


Fig. 4.

Scale half an inch to the foot



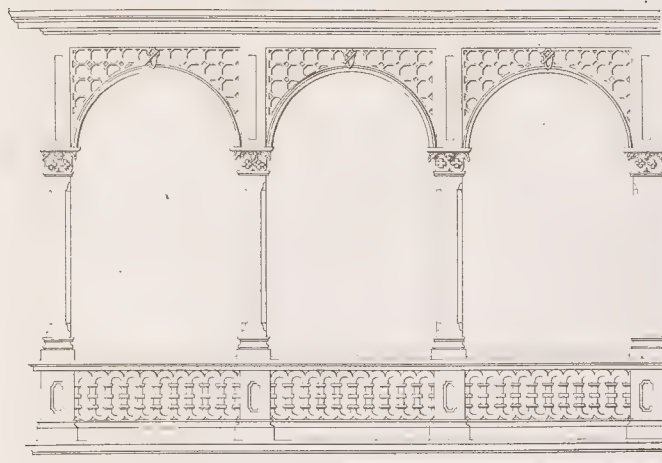


Fig. 1.

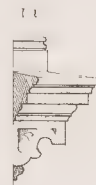


Fig. 5.

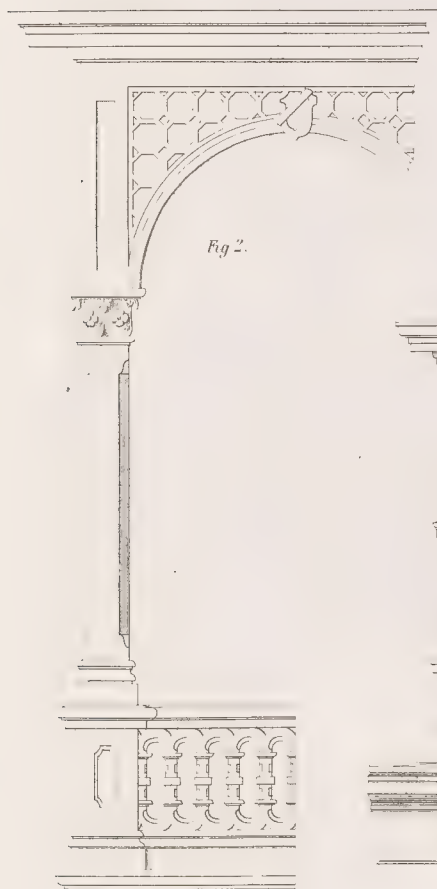


Fig. 2.

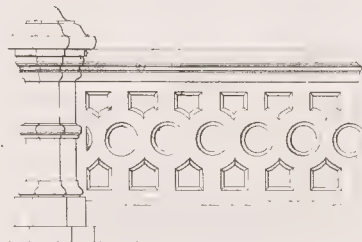


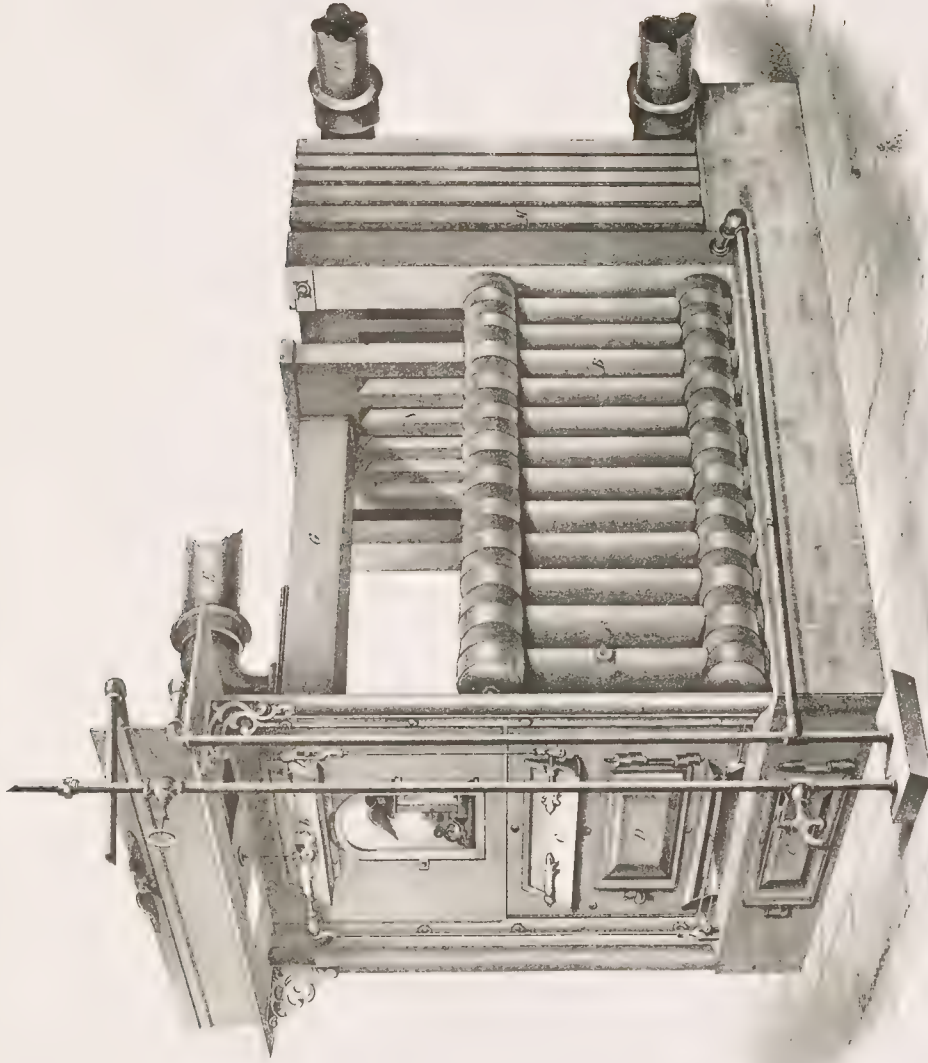
Fig. 3.



Fig. 4.

DETAILS.

Scale of Fig. 1. 1 foot = 1 inch. 1 foot = 1 inch.
Scale of Fig. 2. 1 foot = 1 inch. 1 foot = 1 inch.
Scale of Fig. 3. 1 foot = 1 inch. 1 foot = 1 inch.



HOT WATER APPARATUS

roller;" in other words, where the hand of art has been pruning, grading, and refining, rather than amid the rugged and irremovable inequalities of nature.

PLATE 108 exhibits a geometrical view of the front elevation. Premising that constant reference must be had to the drawings for a complete understanding of the conveniences¹ afforded by this plan of building, we proceed to the description, which may serve as a key to any apparent mystery connected with them. To begin: the basement floor is about four feet below the level of the pavement or surrounding grounds; this applies to all that is represented on PLATE 110, except the drive, the two front vestibules, and the foundation of the octagonal green-house. The drive, as the name implies, is the entrance for carriages to the grounds rear of the building, and also affords shelter to the side entrance of the main vestibule, a convenience desirable in inclement weather; from this vestibule, the floor of which is elevated two steps above the pavement, a flight of spacious marble steps leads to the main hall on the principal floor; also a side door, by a descent of six steps, communicates with the basement. Turning our attention to the other wing of the building, we find an entrance vestibule of smaller dimensions; from this we may descend to the children's saloon and the office in the basement, or by a flight of side stairs ascend to the picture-gallery, on the principal floor. The coal vault on the rear is sunk to the depth of about six feet below the level of the basement floor. All the other divisions of this floor are so plainly exhibited by the drawing referred to, as to need no further explanation.

Proceeding to the principal floor, by way of the entrance vestibule and staircase, we land in a square and groined vestibule, from which we enter the main hall on the right, or, by a short flight of steps, the library on the left. Passing through the hall, on the left is the reception-room, and on the right the drawing-room. Advancing still farther, and passing the main stairway, which is placed in a hall running at rightangles with the entrance hall, we enter the dining-room, beyond which we may, either directly or through a groined vestibule, enter the conservatory, to which is attached an octagonal green-house, accessible by a descent of several steps: both conservatory and green-house are entirely inclosed with glass. From the groined vestibule we may also pass directly into the picture-gallery, a few remarks in regard to which may be appropriate. A picture-gallery, though not an indispensable requisite in a fashionable residence—for a very genteel dwelling may be erected without it—is yet a very desirable appendage, when the taste or munificence of the proprietor enables it to be supplied. Those who have no feeling for the fine arts may be disposed to consider its introduction superfluous; while others, gifted with finer perceptions and more elevated tastes, will demand facilities for their enjoyment; and few will deny that in the study of the "glowing canvas," will be found an enjoyment at once elevated, rational, and instructive.

It is essential that the gallery should have a direct and easy communication with the principal rooms of the house; hence we have placed it, in this instance, so as to be entered directly from the drawing-room through a triple archway, and from the dining-room and conservatory through the groined vestibule or lobby above referred to. It is intended to be lighted by a sky-light, or, more properly, a lantern-light, the rays being admitted from the north through the purest quality of glass, as the light should be steady and without glare. Nor should the finish of this apartment

be so attractive in itself as to injure the display of pictures; "the ornaments must here be subordinate, as the artist who would put such a frame to his picture as to draw off the attention from the picture itself, would be justly condemned."

The story of this apartment is about twenty feet in height to the springing line of the dome; the height of the other principal apartments on the same floor is sixteen feet; hence, in those small apartments adjacent to the private stairs, a mezzanine floor, not represented on the drawing, is intended to be introduced for bathing and minor conveniences.

For the second floor, on PLATE 112 the arrangements are plainly shown. On this drawing the roofs of the wings are shown by lines, the centre building only being carried up. The main stairs are marble, constructed on the self-supporting principle, as shown in detail.

On PLATE 113 is shown the third story; the only peculiarity that we shall here notice is the introduction of the washing and drying arrangements which are generally placed in one of the lower stories. The drying-room has a glass roof, part of which, for use in fair weather, is thrown open to promote evaporation; in unfavorable weather this is closed, and heat conveyed to the room from the furnace, by flues constructed for the purpose; provision is made for the escape of vapor through ample ventiducts. In the wash-room, wash-trays are placed adjacent to a large circulating boiler, which supplies them with hot water.

PLATE 114 exhibits the details of front entrance, elevation, and section.

PLATE 115. Fig. 1, elevation of window, principal story; Fig. 2, section of the same; Fig. 3, main cornice; Fig. 4, balustrade.

PLATE 116. Fig. 1, details of stairs; Fig. 2, section of hand-rail; Fig. 3, archways and columns between the drawing-room and picture gallery; Fig. 4, cap of column; Fig. 5, arch over the foot of main stairs; Fig. 6, profile; and Fig. 7, front of double console supporting the same.

PLATE 117. Fig. 1, side veranda, adjoining reception-room; Fig. 2, details of the same, on a larger scale; Fig. 3, railing of front yard; Fig. 4, front window of library; Fig. 5, bracket, belonging to the same.

PLATE 118. Self-regulating hot-water furnace.

HEATING APPARATUS.

The ancients made but little progress in the practice of warming their apartments, either public or private. When Vitruvius, the father of architectural history, wrote his treatise on Civil Architecture, in the reign of Augustus, the Romans had no chimneys in their houses, nor flues in their walls; they had only stoves, which produced smoke in the rooms, and on this account Vitruvius advised but little carving on internal decorations, lest the smoke, settling upon them, should cause a black and disagreeable appearance. It seems surprising, that when architecture was in its zenith, so little attention was paid to the means of warming their habitations; but it will be remembered that the Romans lived in a climate warmer than ours. Their stoves were

placed in the middle of the room, and the smoke then escaped at the top through a louver. The date of the first chimney in Rome appears to be in 1368. "A Paduanese nobleman, named Francesco da Carraro, when he paid a visit to Rome, being lodged at the sign of the Moon, an inn of note, found there that the fire was kindled, according to the universal custom in that city, in a brazier placed in the middle of the room; whereupon he sent for workmen and caused chimneys to be constructed in the manner of those in use at Padua." Even at the present day, in Spain and Portugal, no houses possess any chimney, except the one in the kitchen; and when it is found necessary to warm the other apartments, a fire of charcoal is placed in the centre of the room in a brass pan, termed a *brazero*.

The Anglo-Saxon nobles, even those who had thousands of vassals at their command, lived at home amid smoke and filth, which to the poorest among us at the present day would seem intolerable. We have an instance of a Gaul, who, not admiring the warlike Romans, even refused to quit his melancholy abode for the gilded and arched ceilings of Rome.

In England, we find in Rochester Castle, built by Bishop Gundulph about the year 1088, fire-places, but no chimney-flues, an aperture being formed in the external wall immediately above the fire-place for the discharge of the smoke; the walls are enormously thick and the fire-places recessed.

The first chimney-flue of which we have any account was in Bolton Castle, built in the time of Richard II. But down to the reign of Elizabeth, with the exception of the monasteries, the greater part of the houses in considerable towns throughout England had no chimneys; the fire was kindled against the wall and the smoke found its way out by the roof, doors, and windows.

Gradually, however, the fire-place came into general use, and was transmitted to America with the first colonists. But in the present generation the ancient mode bids fair to be superseded entirely—at least in the more pretending class of residences, and all public buildings.

It would require no inconsiderable amount of time and space to describe the various appliances that have appeared within the last few years, each claiming superiority as an efficient means of heating domestic and public apartments. Steam, hot-air, and hot-water furnaces have severally come in competition with each other in almost every variety of form. These are all more or less deserving of notice as suitable agents for the transmission of heat, and are in most instances well adapted for the purpose. But our present space is specially devoted to the description of the "Self-regulating Hot-water Furnace" represented on PLATE 108, which we have chosen as containing the best and simplest exemplification of the principle.

Turning to the cellar-plan of the building last described, it will be observed that we have made provision for two furnaces for the warming of this dwelling. The furnace proposed is that represented on the above plate. The arrows in the cold-air duct show the direction of the currents, the cold air being supposed to be admitted at the points X and Y; the use of this will be more readily comprehended after a full description of the furnace.

This hot-water apparatus is the invention of Mr. Thomas T. Tasker, of Philadelphia, and promises to supersede everything else of the kind that has been tried. Hot-water circulating through tubes of cast or wrought iron, for the purpose of radiating heat in furnace air-chambers, has long been considered the most healthy mode of warming; but for the want of a reliable regulator of the fire, it has failed to come extensively into use. This difficulty Mr. Tasker has overcome; starting on the principle of the expansion of water by heat, he has contrived a system of adjustment that gives the apparatus a self-government comparable to a thing of life. By reference to the plate, with the following explanations, this will be understood. Immediately behind the top plate on the front of the furnace is a reservoir, into which the expanded water rises; in this reservoir is a float, which rises and falls with the fluctuation of the water, controlling the fire by means of valves. A rod connects the float with the valve (*b*) opening into the smoke-flue. When the water expands in the apparatus, the float rises and draws the rod on the left upward, and causes the valve (*d*) below gradually to close the air-passage under the fire; when this is entirely closed and that above about half open, should the heat still increase, the top valve (*b*) will still continue to rise, and with it the valve (*c*) over the fire, by the rod on the right. This will not fail to immediately reduce the power of the fire and adjust the furnace to the required temperature.

The mercury gauge, with the scale on the left, indicates the temperature of the water in the furnace, which should correspond with the scale on the opposite side and the thermometer out of doors.

By opening the globe-valve (*f*) the water is admitted through the perpendicular pipe to the feed-box below; thence through the pipe (*p*) into the boiler, B, B; *h*, a cock for drawing off water when necessary to raise the draft-valve (*d*); C, ash-pit door; D, fire door; E, pipe conveying gas to the flue; G, S, the smoke and gas manifolds, or clusters of tubes; M, radiating manifolds; P, P, pipes connecting other cages of manifolds with the boiler. The heated water leaves the furnace by the upper pipe, and after passing through a cage of manifolds, returns to the boiler by the lower pipe, thus keeping the manifolds in the air-chamber constantly full of hot water. The cold air is admitted under these manifolds, and being heated by contact with them, immediately rushes up the flue or flues connecting with the air-chamber, and is thus conveyed to the apartment where warmth is required.

On the cellar-plan, before referred to, we have for brevity used the word pipe to designate what is usually termed the air-chamber. The use of the cold-air duct will now be clearly understood; it is the channel by which a draft of fresh air is constantly supplied, to be warmed and sent through the building, and it is therefore necessary that this air should be of the purest quality that can be obtained; care should therefore be observed that it may not be admitted from any point where the current will be impregnated with noxious or unhealthy gases.

The entire plan of the operation of this furnace is simple, and its self-adjustment is so complete that the labor of attending it is comparatively trifling. The air heated by it is soft, without any scorched, unpleasant odor, there being no possibility of producing a temperature so injurious to

the health, as that produced by the contact of air with a red-hot surface of iron. Nor does it require an excess of fuel, the combustion being regulated by the action of the water on the valves. It is somewhat more expensive at first than the ordinary hot-air furnace, but there is a completeness in the system that entitles it to the consideration of all who seek an efficient and healthy mode of obtaining the desired warmth for either public or private buildings, more particularly those of considerable magnitude.

DESIGNS XXV. AND XXVI.

MODERN CHURCHES.

THE earliest buildings erected for the purpose of Christian worship, as also the first in which Christians had an opportunity of pursuing their own method of arrangement and construction, are those which owe their existence to the espousal of the Christian religion by the Emperor Constantine; and the most ancient and complete example of those now remaining is that of St. Clement at Rome. This and a few other structures at Rome, furnish an opportunity of determining, with a considerable degree of certainty, the form of the churches of that period, and the conclusions thus arrived at are further confirmed by the writings of Eusebius.

We introduce a short description of their general features. The plans of those buildings were either oblong or cruciform, and the distinct divisions are described as follows: "At the entrance to the church was the vestibule or *narthex*, in which were stationed the catechumens and penitents of various stages, and which was frequently divided into two or more parts, each of which was destined for a different class of penitents; the outermost for those who were under the more severe censures of the church, and the innermost for the catechumens; this last division was termed *ferula*, because those who were admitted into it began to be subject to the discipline of the church. These vestibules or porticoes led to the nave, properly so called, in which were assembled the body of the faithful, and which was divided in its width into three or more parts—a central one, with an aisle on each side of it. In the central avenue or body of the building, and at the remote end of the nave, was the choir, shut off from the other parts of the church by a rail, or otherwise; in this were the amboes or pulpits for reading, as also the seats for the choristers, and here was the greater portion of the service performed. From the choir was an ascent of steps to the sanctuary, which was of an apsidal form, having seats all around for the priests, and a more elevated one in the centre of them for the bishop, immediately in front of

which stood the altar. Attached to the church, but forming a distinct erection, was the baptistery, in which persons were admitted into fellowship with the body of believers."

Much has been said and written on church architecture, and we do not wish to weary our readers with a lengthened disquisition on the subject, yet a few remarks, descriptive and general, may not be uninteresting to some. Nearly all the old churches, in England and elsewhere, range east and west, having the chancel at the eastern extremity; nor does this appear to be merely a local peculiarity, but a universal custom; such, with a few exceptions, was the practice of the Christians from the earliest ages.

The most complete form of the parish church consisted of the nave, flanked on either side by an aisle; a chancel at the east; a tower at the western extremity of the same, with a projecting porch toward the western end of the south aisle.

We frequently find them in the shape of a cross, which is certainly a very appropriate and expressive form for a Christian temple; yet the simple parallelogram is on many accounts the more convenient, and is also fraught with symbolical meaning. While the cross is the most significant emblem of Christianity, the latter may be considered as a representation of the ark in which Noah was preserved, which has ever been considered typical of the Christian church. A beautiful appendage to the church is the tower, the principal original object of which seems to have been the suspension of the bells at a considerable height from the ground. We find it in the English examples very generally surmounted by a spire, which serves as a most efficient covering, while at the same time it gives additional height and forms a beautiful finishing, pointing, as it does, "in silence heavenward." It has been remarked that spires are not so frequently found in elevated situations or in level tracts of land as in valleys and wooded country; a fact which would seem to imply that part of their original design was for pointing out the spot occupied by the house of worship.

The style we have adopted in DESIGN XXV. may be denominated modernized Norman. The architects of the present day are necessarily greatly influenced by attendant circumstances in their selection and adaptation of styles; nor can it be expected that in this country we are to copy the peculiarities of old English or continental architecture. Hence the great variety of churches found in our country; yet, whatever may be the other characteristics, the spire is almost universally introduced as a crowning feature, which shows a unanimity of feeling on this subject that seems remarkable, when compared with the great diversity of taste in regard to other particulars.

The example before us (DESIGN XXV.) is intended for the accommodation of a small congregation; the internal arrangement is very simple, yet susceptible of a very pleasing finish. The ground-plan is exhibited on PLATE 121; while the section, PLATE 122, shows the elevation of the chancel arch, the curve of the ceiling, and the construction of the roof and spire.

On PLATE 123 we exhibit a design in the Italian style, on which the spire is superinduced with an agreeable effect. All tastes are not satisfied with the use of the mediæval styles in ecclesiastical buildings; nor is there any just reason why they should be. It seems natural that the professors of the Christian religion should look with veneration on the forms with which the fervid



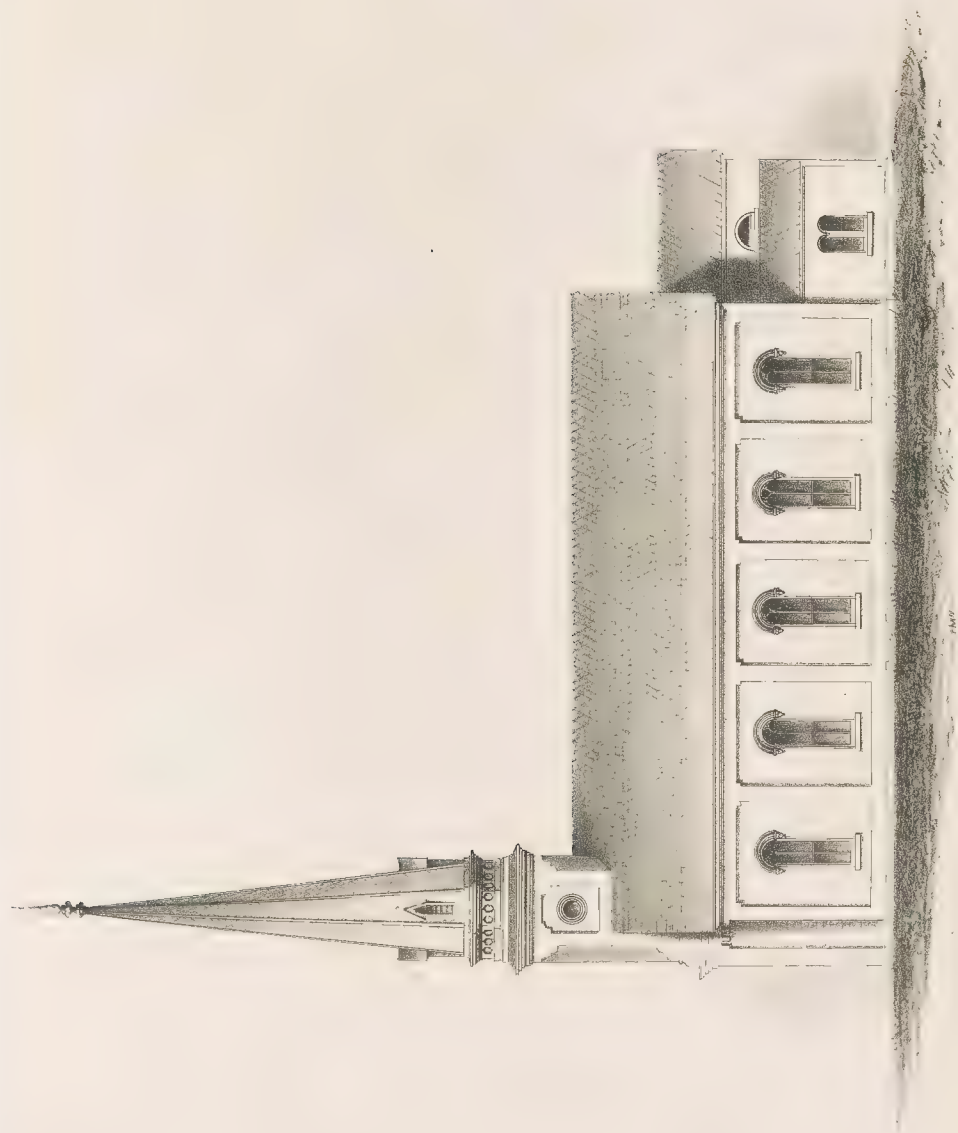
BACK ELEVATION.

Scale of 16 feet to the inch.

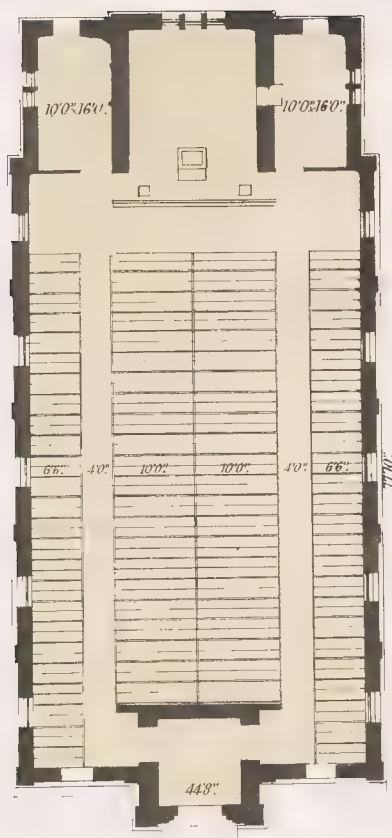
FRONT ELEVATION.

J.F. Williams Esq., Phila.

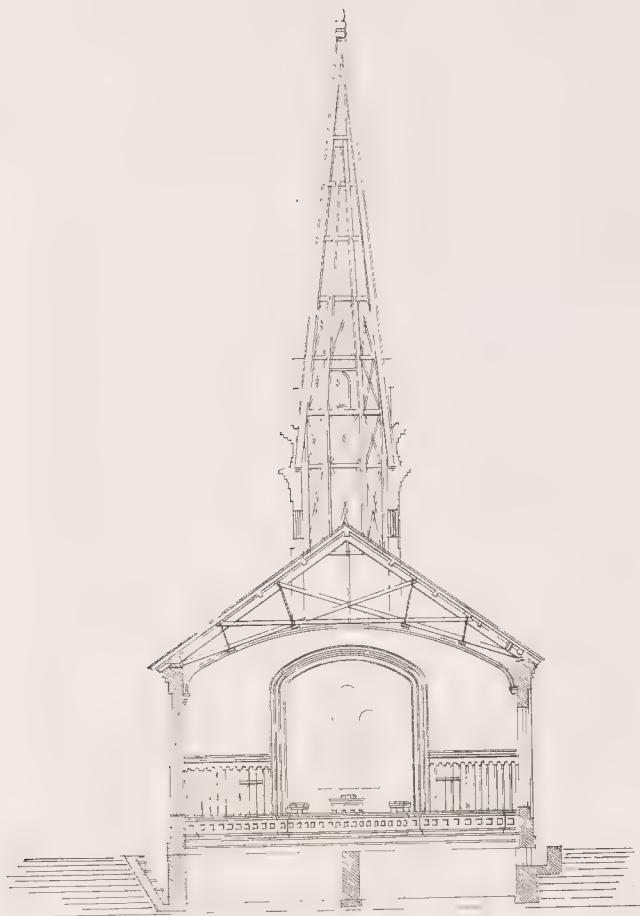
Sam'l Sloan, Archt.



SIDE ELEVATION.



GROUND PLAN.



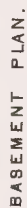
TRANSVERSE SECTION.



FRONT ELEVATION.



PRINCIPAL STORY.

J F Watson Ltd, Phil^a

Christianity of early times decorated its temples. There we find the round arch; this relic of Roman art was seized upon by the Christians, and remained a feature in their ecclesiastical structures for centuries before the application of the pointed arch.

To venerate and employ the pointed, and almost entirely discard the round arch, seems to be the rage of the English at present, and its influence is widely spread and deeply felt in America. It is no easy matter to obtain an impartial representation of the merits of the respective forms with regard to the precedency of their claims. Some assert that the round arch is Roman, and the Corinthian column and entablature the offspring of pagan idolatry, and that, consequently, there can be no propriety in their application to the Christian temple. We fear that an unchristian and inconsistent feeling is exhibited in all this. Notwithstanding our partiality for the Gothic style, as applied to ecclesiastical edifices, we cannot so decry a beautiful thing, because it happened to be discovered and applied by a people with whom we have no affinity of devotional feeling. And again, notwithstanding the dogmatism of the ultra admirers of the pointed form, many are heretical enough to ascribe its invention to other than Christian worshipers. But as we have speculated somewhat on this point already, we dismiss the subject, and append a brief description of
DESIGN XXVI.

The basement floor, PLATE 124, is elevated three steps above the ground. The vestibule is entered by doors in three sides of the semi-octagonal projection in front; two ample flights of stairs lead to the audience-room, over which are flights to the gallery; a rear vestibule on each side of the infant school-room is also provided with stairs to the audience-room and gallery. The remainder of the arrangements are very plainly shown on the drawings, except that the galleries are omitted, in order to prevent confusion; the introduction of side galleries greatly enhances the capacity of the audience-room.

DESIGN XXVII.

A SUBURBAN DWELLING.

DESIGN XXVII. is an example of a suburban house in the Italian style; it would be very appropriately located in an open site with surroundings of a rural character.

Entering from the front veranda on the right, we pass through a vestibule; this opens at rightangles into a hall, or directly into the dining-room. From this hall we may proceed immediately into the drawing-room on the left, or directly across the main hall to the library.

Here we may pause, and devote a few remarks to this all-important appendage to the home of the literary man. A library, as we employ the term, may be defined as an apartment for the reception and orderly arrangement of a number of books; it is also understood, in the modern acceptation, to be an appendage to the dwelling, to which as many of the family as are so inclined may resort at pleasure, to seek without interruption the enjoyment of literary pursuits.

The origin of public libraries is by some authors referred to the Hebrews; and it has been observed that the care those people took for the preservation of their sacred books and the memory of what related to the actions of their ancestors became an example to other nations, particularly the Egyptians.

The libraries of the most ancient nations seem, however, to have been principally repositories of laws and ordinances of their kings. Even the boasted collections of ancient Roman literature cannot be supposed to have been available to the people to any considerable extent.

But with the modern facilities for book-making it is gratifying to know that libraries, public and private, are supported to an extent that is highly creditable to us as a literary people. No dwelling is reckoned complete or worthy to be styled a home, at least for those who make any pretensions to literary superiority, except provided with an apartment for a library of suitable dimensions, lighted, warmed, and ventilated.

Proceeding through the main hall we enter a passage, from which we may advance to the kitchen and the conservatory, or pass out at a side entrance. The kitchen is provided with large closets, cooking-range, and sink. A flight of private stairs extends to the second floor. Beyond this kitchen is a summer kitchen, a convenience duly appreciated by the intelligent housekeeper.

The conservatory is an appendage of no small consequence to those who are partial to the



SIDE ELEVATION.



FRONT ELEVATION.



PRINCIPAL STORY.

Saml. Sloan, Archt.



CHAMBER PLAN.

Scale 1/2 feet to one inch.

J.F. Watson & Lobb, Phila.

beauties of vegetation. The term conservatory strictly applies to a building intended for the preservation of plants from the frosts of winter, yet in its popular application it is almost synonymous with *green-house*. The real difference seems to consist only in this, that in the conservatory the plants are fixed in beds, while in the green-house they occupy movable stages or pots.

This apartment is inclosed principally with glass, and should always be so arranged as to be readily supplied with an amount of heat sufficient to preclude the danger of injury to its contents by frost.

From the main hall, by an easy flight of stairs, we reach the second floor; here the arrangement is made so explicit by the drawing as to need no further comment.

DESIGN XXVIII.

A THREE-QUARTER HOUSE.

THE elevation shown on PLATE 127 represents a plain style of dwelling. Though detached from other buildings, its interior arrangements bespeak the city mansion.

By referring to the plans, PLATE 128, the whole disposition of the interior apartments will be comprehended, with the aid of the accompanying description. The building should be located at a sufficient distance from the street to admit of the porch in front, as represented on the plan of the principal floor. Nor is it intended to be hemmed in on either side; the platform and steps indicate a flank entrance, while the bay-window and porch claim a yard on the opposite side. From the front porch we enter a vestibule, through which we pass to a hall; on the left of this hall is a spacious parlor, agreeably lighted, not only from the front and rear, but by a fine octagonal bay-window; on the right of the hall is a library of fine capacity, to which is attached a fire-proof. Advancing farther, the hall widens, and the room thus afforded is occupied by an ample stairway, beneath the half-landing of which is the side entrance from the street or yard. From this point, through a passage, on the left of which is the dining-room, we may continue to the kitchen; this apartment is provided with range, sink, and boiler, and a wash-house adjacent. Turning from the kitchen to the dining-room, we find on the left a flight of private stairs to the second floor, and on the right, in a convenient position, a wash-basin, intended to be fitted up in complete style. Beneath the private stairs is a flight to the cellar, the apartments of which are intelligibly represented; the warm air-chambers are denoted by the letters A, C. The divisions on the second floor are so plainly represented as not to be misunderstood.

The whole interior of the building is arranged with reference to being warmed from the cellar, while at the same time fire-places are prepared in the principal rooms, to suit those who would prefer them. Where the proprietor is not circumscribed by over-strict notions of present economy, we would recommend, first of all, the use of the self-regulating hot-water furnace, described in another article; otherwise, Chilson's cone-furnace may be applied, it being entitled, in the author's opinion, to an equality, if not a superiority of position, in point of merit, to any hot-air furnace now in use. Nor should we neglect to notice the claims of the steam-heating apparatus; although we are unprepared to recommend it as a means of heating private dwellings in its present stage of improvement, the attainments that have already been made are suggestive of its future applica-



FRONT ELEVATION.

Saml. S. Jones Archt.

F. W. Benson, N. Y.



Scale 1/2 inch to one inch.

J.F. Watson, Archt.

bility. If warming by fire-places should be preferred in the building now under consideration, the low-down grate, hereafter represented, is certainly a desirable and greatly improved substitute for any of the old methods.

With regard to the exterior walls of this building, it may be observed that in case the procuring of suitable stone for the facing of the walls should involve too considerable an expense, the expedient of rough-casting may be resorted to. This, when done in an agreeable color, and marked off in blocks, in representation of coursed masonry, though reckoned at variance with the canons of architecture, may be done to admiration. Aside from the want of architectural truth displayed in this pseudo-masonry, but little can be said against it, theoretically; practically, when properly executed, it may be considered an economical expedient: but, unfortunately, is often so indifferently done, as to call down censure on the whole practice. We have seen scores of houses that might have been beautiful but for a disgraceful shedding of their outer covering.

DESIGN XXIX.

AN ELEVATION IN THE FRENCH STYLE.

It is not an unusual subject of complaint that architecture is, both as a science and an art, too closely circumscribed by rules that cannot be invaded, and that the imagination of the designer is, as a consequence, confined in leading-strings. With the same degree of propriety it might be said that painting is a feeble and meagre art because there are only seven rays in the spectrum, and the artist is dependent on these and their modifications exclusively for the development of his conceptions; or that sculpture can claim no further merit than what may attach to the faithful copying of the productions of nature. Each allegation is equally absurd.

In the variety manifested in the forms and distribution of the animal and vegetable kingdom, the adaptation of means to the end, and the universal corresponding fitness of every part, command our admiration; but when individual portions are transposed the appearance is unnatural, and therefore incongruous and displeasing. This harmonious fitness is more truly the source and secret of all beauty than any abstract virtue of form or figure.

Hence the extended latitude allowed to the architect for the application of variety in design may be regarded as proportionate not only to the natural diversity of attending circumstances, but to the various peculiarities of the people among whom he lives and labors.

In no city in the world is exhibited a greater or more pleasing variety of modern architecture than in the French capital. On a late tour through France, and more particularly during his sojourn in Paris, the author was closely observant of the French modes of building, and, notwithstanding some of their apparent eccentricities, he is disposed to award to the French people and their architects the highest meed for modern excellence in this department of art. While their manner of life is so widely different from ours as to preclude an entire similarity in the interior arrangement of dwellings, there are points innumerable wherein the American architect may be benefited by the study of French designs. The French are an inventive people; and while they are less dogmatical, and cling less tenaciously to ancient forms and usages than their neighbors, they are fertile in the production of a supply to replace whatever old devices their taste may lead them to discard. This accounts for the astonishing character of originality borne by their architecture.

It is undesirable that the American people should run mad after novelties because they happen to be of foreign origin. Such a proceeding, while it detracts from the value we set upon our



FRONT ELEVATION.

Scale 8 feet to the inch.

own originality, is certainly suggestive of an unfortunate want of discretion. Yet there is no reason why we may not follow a good example, as far as it may be conducive to our real benefit. Thus we may look to the French school, not because it is French, but because it is fraught with instructive matter, and its productions evince so thorough a development of novelty and architectural beauty that it may be drawn upon for the embellishment of American architecture without interfering with the practical utility of our edifices.

DESIGN XXIX. is the elevation of a first-class suburban mansion, in which some of the peculiarities of French architecture are introduced. Among the most conspicuous of these is the casement window, and the steep roof with hips and dormer-windows. The design is applicable to a large double-house, and should be executed in stone of a warm, rich color. The Caen stone, so universally used in Paris, and of which an example may be seen in Jackson's building, in Arch Street, above Fourth, Philadelphia, may be applied with a pleasing effect. The author is of the opinion that this material might be introduced here at an expense scarcely exceeding that required in procuring stone from the British American quarries.

DESIGN XXX.

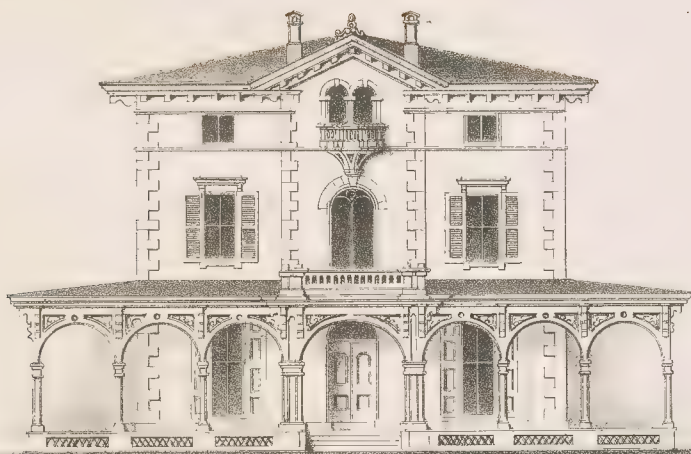
A SUBURBAN RESIDENCE IN THE ITALIAN STYLE.

THE Italian style of building is fast becoming a favorite in this country, and for suburban residences perhaps it stands unrivaled. It can be made gay or sombre, lively or dull, according to the taste or caprice of the designer. The lighter stamp is of course preferable for domestic building, as no person is supposed to be fond of contemplating the aspect of a prison, much less of possessing a home with similar external characteristics. A landscape, in which this style of building is predominant, may be very beautifully diversified by the occasional introduction of a campanile, of which an example is given in DESIGN V.; this tends to enliven the otherwise monotonous appearance of a suburban locality, while a desirable elevation is gained, affording a view of the surrounding country. The beautiful effect of the projecting cornice is much enhanced by its usefulness in protecting the exterior walls from the injurious effects of variable weather.

DESIGN XXX. is an example of a residence of the class above referred to. The arched veranda, which partially surrounds this building, is a useful addition, and at the same time an agreeable embellishment.

A central hall divides the main building into two equal portions: one of these, enlarged by an extension into the rear building, is occupied by the dining-room and kitchen, and their accompanying closets; the other is wholly given to the drawing-room. We would invite attention to this apartment; entirely surrounded by the arched veranda, it is equally sheltered from the storms of winter and the intense heat of summer; its windows are extended to the floor, thus admitting of a free communication with the veranda, which, if the house is judiciously located, is pre-eminently desirable in the summer months.

The thorough hall is of material advantage; it is not only promotive of ventilation, by admitting, at pleasure, the passage of a current of fresh air through the interior of the building, (which is a matter of considerable importance in some situations,) but is favorable to the construction of a spacious stairway. Particularly where this feature occupies so conspicuous a situation as the main hall, should it be of an attractive character. Not only should it be wide and of easy ascent, but tastefully embellished with newel, hand-rail, and balusters of a well-chosen material, varnished on the natural color of the wood. The newel and rail may be of mahogany or walnut,



FRONT ELEVATION.



FLANK ELEVATION.

Scale 1/2 inch to one inch.



Samuel Sloan Archt.

Watson Lith. Co.

while the balusters are very appropriately of a lighter-colored wood, such as ash or maple. A very pleasing combination is sometimes formed by inlaying the upper section of the walnut rail with rosewood; of course this is more expensive than the plain rail, and is only admissible where the cost is made entirely subservient to considerations of taste. For the stairs themselves, nothing is superior to the common white-oak, particularly if judicious selections are made with reference to the grain, and the surface carefully smoothed and polished.

The private stairs from the kitchen are so arranged that access can be had to the second floor of the rear building and two chambers of the front building, without making use of the main hall as a thoroughfare. The remainder of the arrangements are rendered intelligible by the drawings of the first and second stories, found on PLATE 131.

The walls of this building are assumed to be of brick, and faced with cut stone; if this is likely to prove too expensive, it may be represented by rough-casting.

The low pitch of the roof involves the use of metallic covering. Patent roofs of various compositions are claiming the notice of the public; and though we are as yet unprepared to place any of them in advance of the old time-tried materials—slate, lead, and tin—we entertain hopes that some of these inventions, ere long, will prove at once efficient and economical as substitutes.

ENCAUSTIC TILES.

It seems probable that the manufacture of Encaustic Tiles originated in the endeavor to imitate the Roman mosaic pavements, by means of colored substances inlaid upon stone or marble. Of this stone *marquetry* a few examples have escaped destruction; a fine specimen may be seen at Canterbury Cathedral, England, and also at the Abbey Church of St. Denis, and the Cathedral of St. Omer, in France. There are other specimens of pavements, both in England and France, which seem to form a transition from the marble mosaics to the tile pavements so extensively employed during the middle ages. In these, each is of a single color, but so combined as to form a polychromatic pavement in regular geometrical designs; such pavements existed at Fountain's Abbey, Yorkshire; also at Ely, where the tiles presented a great variety of form and size; and although the patterns were principally formed by the outlines of the tiles, other lines were sometimes impressed upon them, to carry out the details of the design; the most elaborate example of such a pavement is that of the Prior's Chapel, built by Prior John de Crauden, A.D. 1321.

The manufacture of Encaustic Tiles with more than one color cannot properly be referred to a more remote date than the beginning of the thirteenth century; and one of the earliest and most complete specimens of the art is that of the pavement of the Chapter-house at Westminster. Besides these examples, a great variety are to be found in Winchester, Gloucester, and York Cathedrals, Bredon, Tewkesbury, and Reading Abbeys. It is not, however, to be supposed that the use of tiles was entirely confined to ecclesiastical buildings, as many examples have been found of their introduction into domestic architecture.

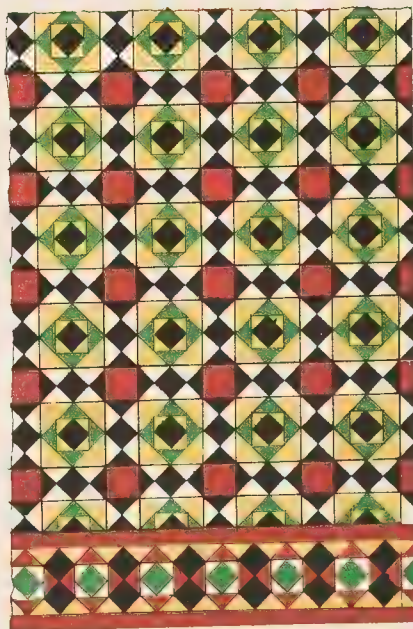
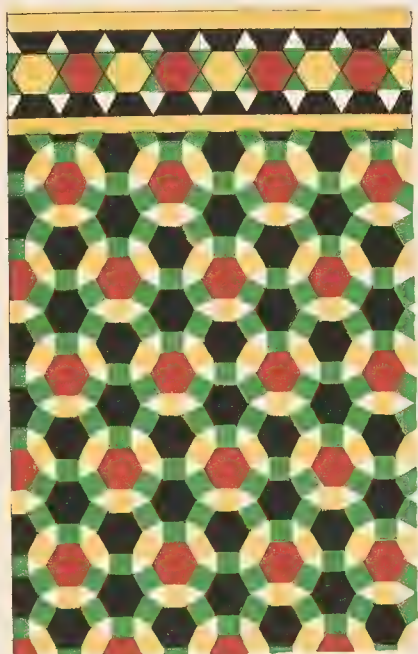
The revival of this branch of manufacture is attributed to Messrs. Minton & Co., of Stoke-upon-Trent, England, and great praise is due to those gentlemen for the liberal spirit with which they have sought to restore this beautiful system of decoration. The manufacture of tiles was for a long period attended with many difficulties; and it was only after years of unremitting perseverance and a large expenditure of capital that success was attained.

Encaustic, or *Inlaid Tiles*, are made by pressing clay, in a plastic state, into an embossed plaster mould, the pattern or design on the mould being raised; when the tile is withdrawn from the mould, the outline of the pattern is indented; the indented parts are then filled in with liquid colored clays, according to the colors that are wished to be produced. The surface is then scraped quite flat, until the pattern appears well defined. The tile is then fired, which brings out the colors to the proper tint; almost any shade of color can be given to the clay employed, and only a few of the more brilliant colors require a glaze for protection.

MINTONS ENCAUSTIC TILES FOR FLOORS,



MINTONS ENCAUSTIC TILES FOR FLOORS,



Plain Tile, or *Tessera*, are made by the compression of powdered clay and flint into metal dies of any geometrical form that may be desired, the clays having been previously stained with metallic colors; each tile is of course of the same color throughout, and when burnt to a semi-vitrified state the texture is so hard as to be almost indestructible.

It will afford some idea of the extent of this newly-created branch of business when we state that during the last ten years, in Great Britain, upwards of five hundred churches have been either wholly or partially paved with Minton's tiles; seven hundred mansions and conservatories of the nobility and gentry, as well as a large number of club-houses, banks, palaces, castles, and public halls.

Among the most costly and elaborate specimens, may be named the marine residence of Her Majesty the Queen, at Osborne; the Duke of Sutherland's, at Clifden; the new palace at Westminster; St. George's Hall, Liverpool; also, the palace of the Sultan, at Constantinople. Within the last eight years Minton's tiles have been very extensively used in the United States and the Canadas: they are used on the floors of the new Capitol at Washington; and we understand upwards of one hundred churches have been paved with them, as well as a large number of public halls, custom-houses, banks, hotels, and stores. They have also been introduced into nearly five hundred dwellings in halls, vestibules, conservatories, etc.; and it is satisfactory to be able to state that the demand is steadily increasing, and it cannot be doubted but their use will be far more general. The moderate cost at which they can be put down, their great durability and decorative fitness, cannot fail to make them an indispensable article in buildings of any architectural pretensions.

On PLATES 132 and 133, the designs are drawn to a scale of one-quarter of an inch to the foot, and the colors convey a very distinct idea of the original tile.

The author has been, perhaps, the first to recommend their introduction in this country, and having in every instance found them to give unqualified satisfaction, the accompanying examples have been introduced, in order that projectors, and others whom it may interest in different sections of the Union, may thus be made acquainted with their properties, and able to judge of their appearance. Other information may be obtained of the principal agent and importer to this country of this valuable and beautiful material—Mr. S. A. Harrison, of Philadelphia. This gentleman is in possession of a great variety of patterns, and attends to laying them in any part of the United States; of him may also be obtained the Terra-cotta Chimney-Caps and Vases contained in a succeeding plate.

PLATES CXXXIV., CXXXV., AND CXXXVI.

CONTAIN EXAMPLES OF TERRA-COTTA CHIMNEY-TOPS AND GARDEN VASES, MANTELS,
FURNACE, LOW-DOWN GRATE, ETC.

PLATE 134 exhibits designs for terra-cotta chimney-tops and garden vases. Terra-cotta is remarkable for its durability under exposure, while its ornamental character gives it, in point of appearance, a decided superiority over the somewhat uncouth brick shaft, at present in general use. Its well-known property of resistance to the effects of the weather, and those gases evolved from burning coal, which prove so destructive to those composed of other material, renders the terra-cotta chimney-cap unrivaled. Experience has amply verified the fact, that while the brick chimney-top soon succumbs to the combined effect of these influences, the terra-cotta shaft, being completely vitrified, is not only impervious to injury, but also superior to all others in point of beauty, cheapness, and durability. The shafts here shown are of a length equal to that of the exposed portion of the chimney usually affected by the destructive causes alluded to above.

PLATE 135 contains six designs for enameled slate mantels. This material has been extensively employed in Europe, for architectural purposes, for nearly a century. Though its use in this country is of comparatively recent introduction, the whole subject is at present attracting considerable attention. Rich in almost every variety of mineral product, our soil contains strata of this useful material in quarries, as yet unopened or but partially developed, but which bid fair to rival, if not surpass, in excellency and extent, those of Wales. Of these, Lehigh, Peach Bottom, and the extensive quarries owned by the "Penrhyn Mantel and Slate Co.," at Middle Granville, Washington County, New York, may be instanced as among the more prominent. The following observations on the properties and uses of slate, quoted from the "Illustrated Catalogue of Useful and Ornamental Articles," recently published by the latter-named company, may prove both useful and interesting:—

"Slate may be said to be indestructible. It is impervious to moisture; resists the corroding effects of the atmosphere in all climates; it becomes indurated by time, and is changeless in color. Its tenacity of resistance to vertical pressure is about one-third to that of cast-iron. It admits of little or no deflection when submitted to a strain parallel with the plane of its laminae, and, when placed in this latter position, exceeds every other kind of stone, and nearly equals cast-iron, and is always infinitely preferable in point of safety; hence its great value for geometrical staircases, balcony bottoms, trusses, cantilevers, hammer-beams, consoles, and other similar projections, that have to support great weights from one bearing or point of suspension.

"Slate possesses some very remarkable and peculiar properties. It may be split into sheets

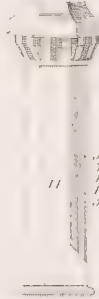
Scale for Chaises, Tops one half inch to a foot



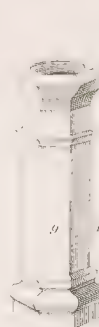
Base 13



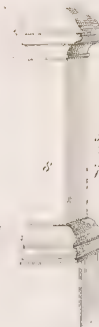
Base 11 1/2



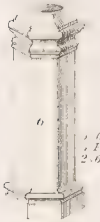
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Base 10



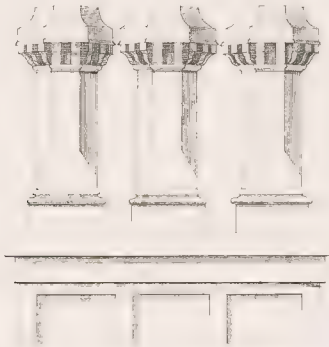
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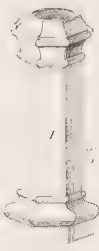
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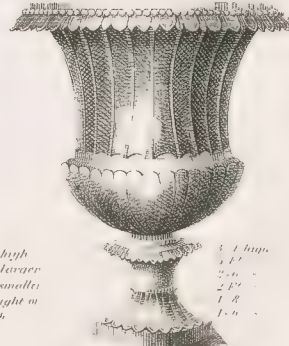
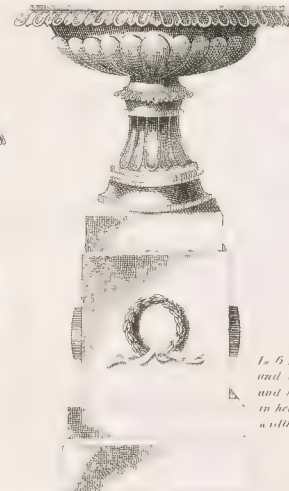
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Base 12

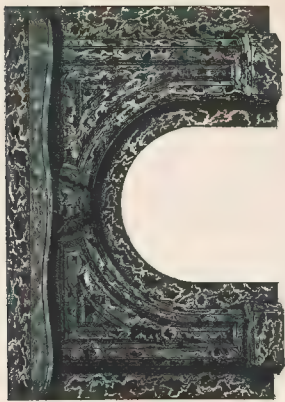


Base 13



1 to 6 high and larger and smaller in height as well

Plate 135.

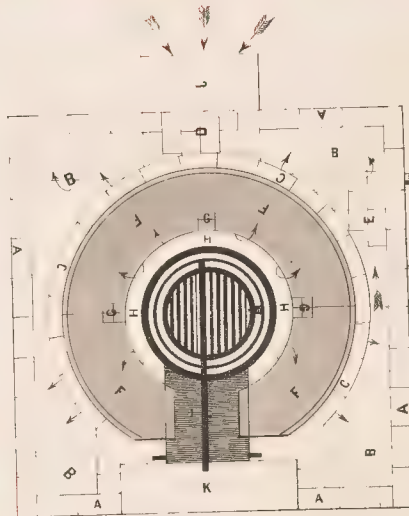
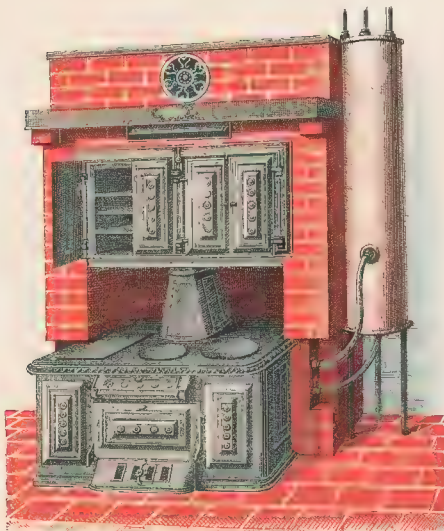
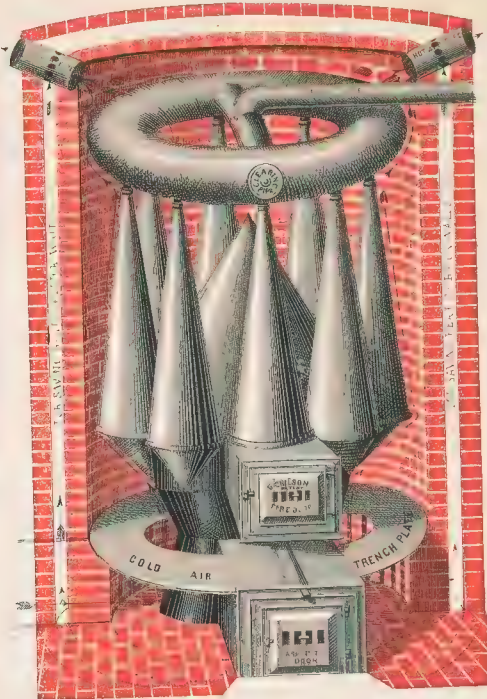
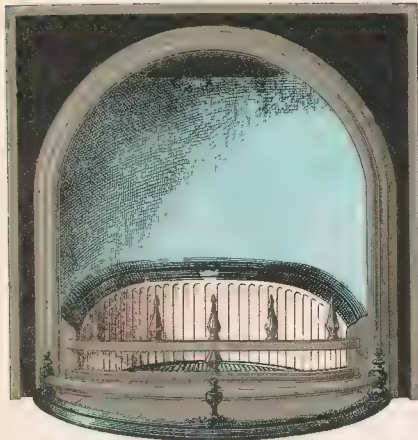


San Sloan Arch

San Sloan Arch

Plate 136.

FRONT ELEVATION



L.N. Rosenthal Lith. Print

as thin as a piece of card-board; it is a conductor of heat; does not tarnish with oil or grease spots; resists the action of most of the acids and alkalies; can be wrought to any design, plain or ornamental, by machinery or any sharp steel instrument; gives freely to the saw or rasp, and admits of a smooth surface. It receives and rigidly retains on its surface the chemical or metallic compounds used in japanning or enameling, by which process it is marbled and otherwise ornamented with the most artistic and magnificent designs, while its surface presents that of a polished mirror. No stone material, as hitherto discovered, can be rendered useful in such a variety of ways; and as more particularly applied to the general purposes of building, the architect finds in it a material on which he can portray in bold outline and sharp relief, with safety and beauty, any embellishments in any order or style of Grecian, Gothic, Oriental, or Domestic Architecture."

The designs presented are printed in colors, so as to convey an idea of the high perfection which may be attained in the enameling or marbling of slate. By this process beautiful imitations of the richest and most expensive foreign marbles—such as Spanish, Egyptian, Verd-antique, Sienna, Porphyry, Brocatelle, and other rare and desirable kinds—may be produced in a manner so perfect as to challenge detection after the closest scrutiny. Mantels finished in this style are unequaled, attain a very high polish, retain their beauty much longer than common marble, and are not injured by smoke, heat, coal-gas, or acids, and possess the desirable quality of cheapness.

PLATE 136. This plate contains "Chilson's Patent Cone-Furnace" and "Cooking-Range;" to which is added a specimen of what is commonly termed the "Low-down Grate." Having had occasion frequently to refer to these in the course of our descriptions, we have appended them in order to illustrate our previous references.

The Hot-air Furnace here represented, is one of the best at present in use, and is extremely well adapted for heating purposes in situations where, on account of the expense or the smaller area to be heated, the use of the hot-water furnace, to which we have elsewhere referred, is not necessary or desirable.

It is shown in elevation, surrounded by the brick-work, which is hollow. The diagram immediately beneath represents the ground-plan, on which the arrows point to the cold-air duct I; B designates the cold-air chamber; F, the covering; H, the outlet; A and C, the exterior and interior walls of the chamber; E and D, portions of the brick covering; G, brick piers, supporting plates; and K, the ash-pit.

The "Double-Oven Cooking-Range," is another manifest improvement, containing many advantages which render its use desirable; the arrangements for heating water by means of a water-back and circulating boiler, and for broiling, roasting, boiling, and performing all the minutiae of the culinary art, may be esteemed perfect.

The "Low-down Grate" is so called from the fire being made on a level with the floor of the room to be warmed, which diffuses a more genial heat over the lower part of the room. The ashes fall into the cellar, in an ash-pit built for the purpose, thus obviating the necessity of taking up the ashes daily, and preventing dust in the room.

CONCLUSION.

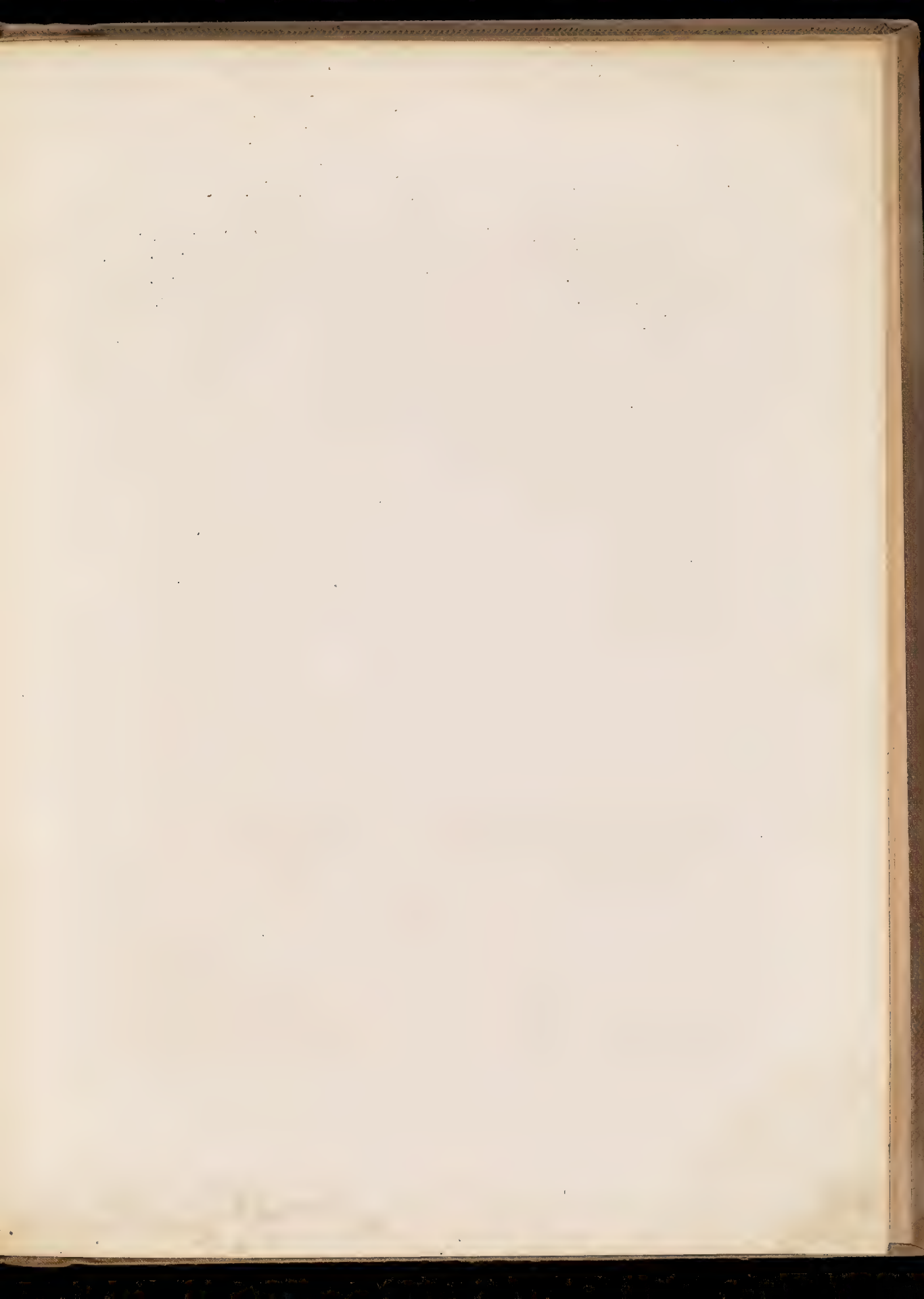
THE publication of this work has been carried forward at a heavy expense, with a view to the general advancement of the profession which the author has espoused, and to the success of which he has thus far devoted his energies; and it is no small source of satisfaction to find, on a review of the task he has accomplished, that it rather exceeds his original hopes and intentions.

Although surrounded during the greater portion of the time of its preparation with all the contingencies incidental to an extensive and pressing office business, he has spared no effort to produce a work that shall be at once illustrative of the state of American art, and creditable to American literature. Feeling that he was without a guide, a pioneer in an unbeaten path, he approached his task with diffidence. But the encouragement received from every quarter of the Union nerved him to its fulfillment, and he now submits, with some degree of confidence, the fruit of his labors to the approval of a discerning public.

Founded on a practical basis, this publication is calculated to benefit all who are interested in the building art. The citizen who desires a new residence or place of business will be assisted in his choice of style and manner of arrangement by referring to the numerous examples here placed before him; the architect, it may be affirmed without presumption, will find instructive hints on the adaptation of various styles to the requirements of American building; the builder is furnished with a fund of information of no small value in the practice of his vocation; in short, the tendency of the work is to aid the onward march of architecture by every agency having any influence on the rapid development of the art.

The spirit of the age demands that we shall no longer tenaciously cling to the stiff forms of utility adopted and employed by our immediate predecessors. With the increase of wealth the demand for novelty strengthens, and it is a subject of regret that a frequent result of this thirst for something new is a gross perversion of the principles of architecture, owing entirely to vague and extravagant conceptions of the true and beautiful. While this publication is not intended to abate the taste for novelty, it is hoped that it will be instrumental in directing the current into the right channel, and checking the wild extravagance in design that so frequently, in modern times, ignores the canons of proportion and leaves its production to groan under a burden of unmeaning ornamentation.

In connection with an expression of thanks to the public for their kind reception of a former work, and a hope that further efforts may meet with similar favor, the author may announce the issue of a work on CONSTRUCTIVE ARCHITECTURE, embracing a quantity and variety of matter of importance to the builder and student of construction, never before published within the compass of a single volume. It appears simultaneously with this work.



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